

# SUPPLEMENT.

# The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

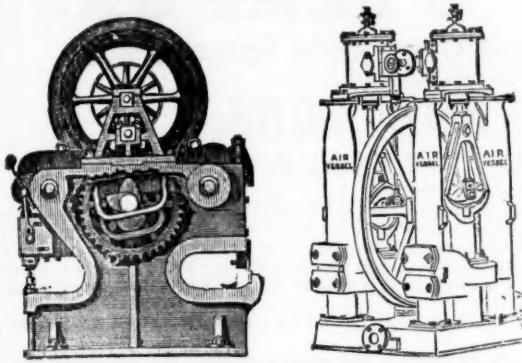
[The MINING JOURNAL is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

No. 2223.—VOL. XLVIII.

LONDON, SATURDAY, MARCH 30, 1878.

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exhibited the McKeon Drill alone as the MODEL BORING MACHINE  
for the St. GOTTHARD TUNNEL.

SILVER MEDAL of the Highland and West of Scotland  
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In a series of comparative trials made at the St. Gothard Tunnel, the McKeon Rock Drill continued to work until the pressure was reduced to one-half atmosphere ( $7\frac{1}{2}$  lbs.), showing almost the entire motive force to be available for the blow against the rock—a result of itself indicating many advantages.

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The McKEAN ROCK DRILLS are the most powerful—the most portable—the most durable—the most compact—of the best mechanical device. They contain the fewest parts—have no weak parts—act without SHOCK upon any of the operating parts—work with a lower pressure than any other Rock Drill—may be worked at a higher pressure than any other—may be run with safety to FIFTEEN HUNDRED STROKES PER MINUTE—do not require a mechanic to work them—are the smallest, shortest, and lightest of all machines—will give the longest feed without change of tool—work with long or short stroke at pleasure of operator.

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FROM 5 TO 10 PER CENT. OF ORE OTHERWISE LOST, IS SAVED.
- 4.—THEY ARE THE ONLY MACHINES THAT MAKE THE ORE CLEAN  
FOR MARKET AT ONE OPERATION.

They have been supplied to some of the principal mines in the United Kingdom and abroad—viz.,

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WASTE HEAPS, consisting of refuse cherts and skimpings of a former washing, containing a mixture of lead, blende, and sulphur, DRESSED TO A PROFIT.

Mr. BAINBRIDGE, C.E., of the London Company's Mines, Middleton-in-Teesdale, by Darlington, writing on the 20th March, 1876, says—"The yearly profit on our Nanthead waste heaps amounted last year to £600, besides the machinery being occupied for some months in dressing ore-stuff from the mines. Of course, if it had been wholly engaged in dressing wastes our returns would have been greater; but it is giving us every satisfaction, and bringing the waste heaps into profitable use, which would otherwise remain dormant."

Mr. T. B. STEWART, Manager of the Duke of Buccleuch's Mines, Wanlockhead, Abington, N.B., writing on 30th March, 1876, says—"I have much pleasure in stating that a full and superior set of your Ore Dressing Machinery has been at work at these mines for fully a month, and each day as the moving parts become smoother, and those in charge understand the working of the machinery better, it gives increasing satisfaction, the ore being dressed more quickly, cheaply, and satisfactorily than by any other method."

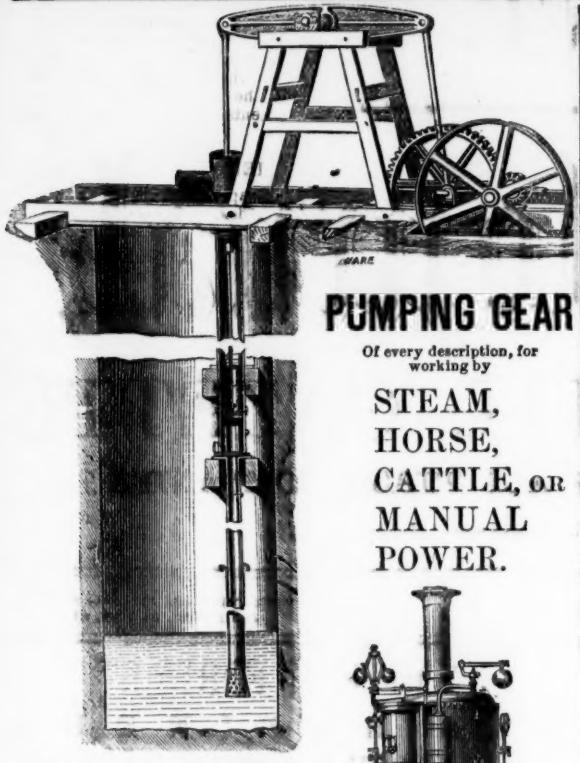
Mr. BAINBRIDGE, speaking of machinery supplied Colberry Mines, says—"Your machinery saves fully one-half on old wages, and vastly more on the wages we have now to pay. Over and above the saving in cost is the saving in ore, which is a full short of 10 percent."

GREENSIDE MINE COMPANY, Patterdale, near Penrith, say—"The separation which they make is complete."

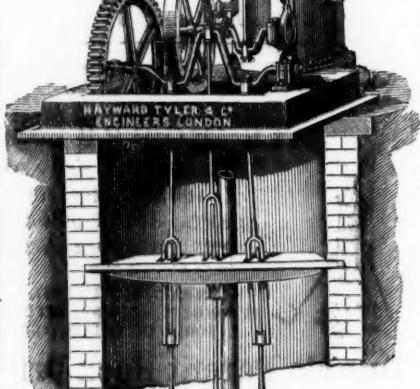
MR. MONTAGUE BEALE says—"It will separate ore, however close the mechanical mixture, in such a way as no other machine can do."

MR. C. DODSWORTH says—"It is the very best for the purpose, and will do for any kind of metallic ore—the very thing so long needed for dressing-floors."

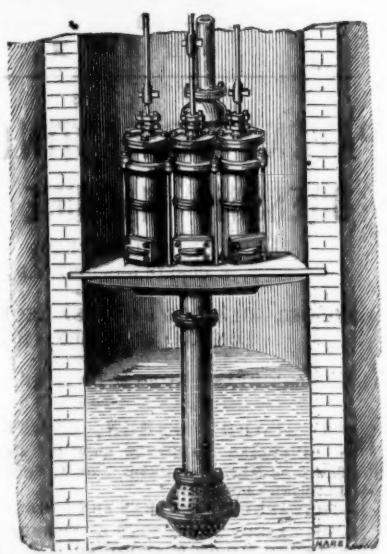
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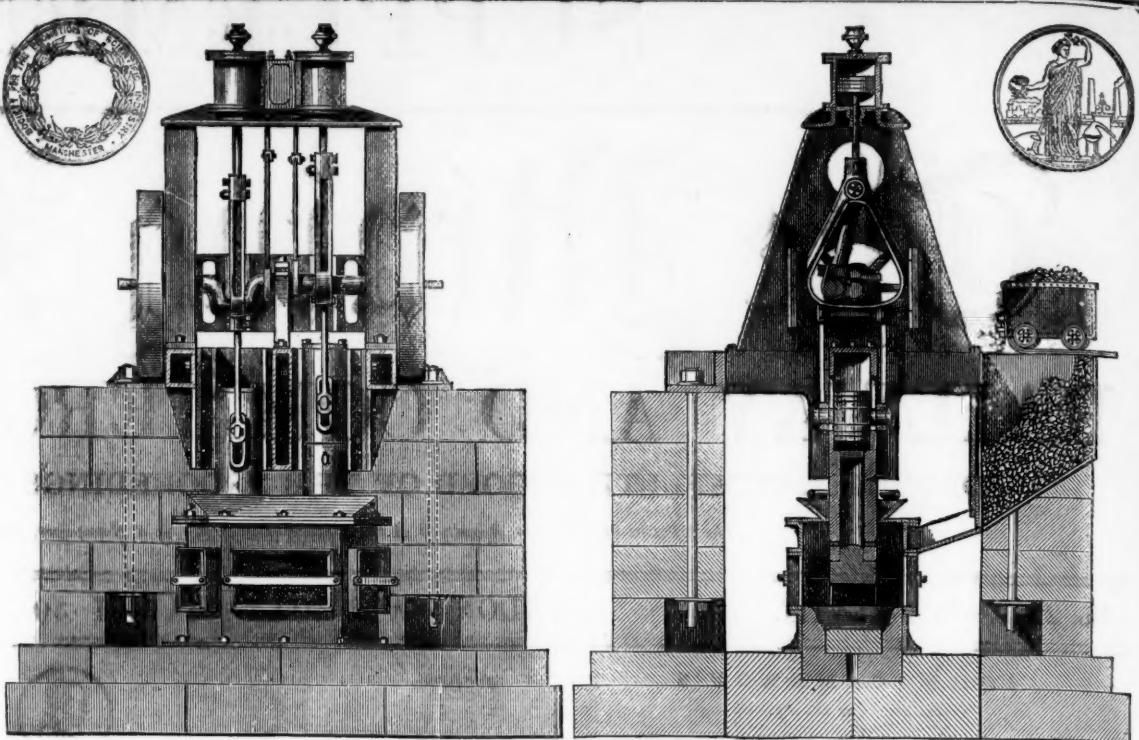
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PNEUMATIC STAMPERS,**For Pulverising Tin and Lead Ores, Gold Quartz, &c.,  
SOLE MAKERS FOR CORNWALL.**N. HOLMAN AND SONS,  
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All objectionable features of "wear and tear" common to the original and existing Pneumatic Stamps (driven by belts) are removed in this patent, and leather glands and stuffing boxes entirely dispensed with, the pneumatic piston being reciprocated into the compressing chambers by direct-action from without. These double machines are guaranteed to be of the capacity of 36 ordinary heads of cam and lifter stamps, and engineers will at once see that, inasmuch as the power is directly applied to its work (without the medium of belts and other gearing), the minimum consumption of coal (all other conditions being equal) must be the result.

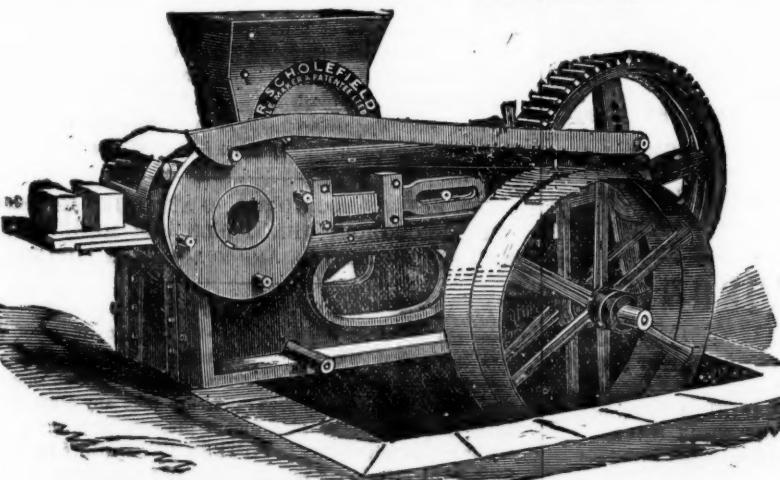
The COST OF THESE MACHINES (including boiler) is about ONE-THIRD OF THE ORIGINAL CAM AND LIFTER STAMPS, to do the same work.

ROTARY STAMPERS SUPPLIED ON THE SAME PRINCIPLE, WITHOUT STUFFING BOXES OR GLANDS, WHERE RUNNING GEAR EXISTS, OR WITH HORIZONTAL CONDENSING ENGINES AND BELTS TO DRIVE THEM, IF PREFERRED.

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PATENTED 1873.



production, and the hands required to make 10,000 pressed bricks per day:

2 men digging, each 4s. per day	£0 8 0
1 man grinding, 4s. 6d. per day	0 4 6
1 boy taking off bricks from machine, and placing them in barrow ready for the kiln, 2s. per day	0 2 0
1 boy greasing, 1s. 6d. per day	0 1 6
1 engine-man, 6s. per day	0 5 0
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Total cost of making 10,000 pressed bricks £1 5 0, or 2s. 6d. per 1000.

(SETTING AND BURNING SAME PRICE AS HAND-MADE BRICKS.)

N.B.—Where the material can be used as it comes from the pit, the cost will be reduced in digging.  
As the above Machinery is particularly adapted for the using up of shale, bind, &c., it will be to the advantage of all Colliery Owners to adopt the use of the said Brick-making Machinery.

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**SCHOLEFIELD'S ENGINEERING & PATENT BRICK MACHINE WORKS,  
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## Original Correspondence.

## UTAH MINES, AND THEIR GEOLOGY—No. II.

*[Concluded from last week's Journal.]*

The American Fork and Silver Lake mining districts commence 2 miles south of Alta and 48 miles south of Salt Lake City; they adjoin Little Cottonwood on the south and south-east, and Snake district on the south and south-west sides. The characteristic geological formation of these districts are the quartzites, schists, and dolomite of the Devonian and Lower Silurian periods. The same overlie the granite of Little Cottonwood on the eastern flank of the great granite ridge of Little Cottonwood. The Silurian and Devonian limestones overlie the quartzite, the first in the head or north-east part, and the latter in the lower or south-west portion of the district, from which they are separated by a thin bed of schist 10 to 40 ft. in thickness. These limestones appear in beds, and assume the most unique forms, ridges, and spires, representing a mass of from 1000 ft. to more than 2000 ft. in thickness. Coming across the divide from Little Cottonwood we observe a fracture in the rocks of considerable extent. On the east side the schists to a thickness of from 1000 ft. to 3000 ft. are predominant; on the west side the younger sandstones prevail. This line of fault, or better said faults, can be distinctly traced from the divide down the canyon to within the vicinity of the Goldseeker Mine, 2 miles below and west of Forest City, a distance of 7 miles, crossing in their course three divides. There are distinctly visible in the upper or eastern part of American Fork three different faults. The first lies almost horizontal, and throws from east to west; the second dislocates, and throws at an angle of plus minus 60° from south east to north-west, and the third fault dislocating again, the whole diagonal in a throw from north-north-west to south-south-east. The country on either side of and across this line of faults is traversed by numerous fissures and strata veins, which are in turn interrupted and broken through by several extensive porphyry dykes. On Miller Hill above are three large dykes, one coming from the west, another from the north-west, and a third from the north-east, and all running towards the Miller Peak. A great number of these deposits have been opened to a more or less extent, but in no case beyond a depth of 300 ft., although in strike some mines have drifted for more than 1000 ft. on the vein. The reason for the fact that these deposits have not been opened beyond a certain depth is to be found in the extensive dislocations above described, and which seem to be entirely foreign to miners and mineowners here. It will be seen from the above-described dislocations that each successive fault throws the deposit further downward. The extent of all faults added together amount, as I found, to 68 ft. It is very suggestive to connect the dislocations of American Fork with the disturbances which took place during the time of the second upheaval, which are so plainly illustrated in those parts of Cottonwood which are around Emma and Patsey Marley Hills. Here we find beds of limestone and schist upon the granite, dipping at an angle of from 30 to 40° east, a long distance off from the place from which they evidently were originally torn; which step will lead us a step further to suggest the presence of the granite also in American Fork as underlying the sedimentary rock. Granite appears in American Fork in the western and north-western portion in the same magnitude as it appears in the Cottonwoods. The character of the ore in American Fork is to a certain extent the same as in the Cottonwoods. The vein fissures are filled as gangue with broken fragments from the wall-rock, with honeycombed quartz-spalls, like fluor-lime and feldspat.

More than 100 miles south-east of Salt Lake City on the eastern flank of the Wasatch range are situated the Sanpete coal mines. The formation in which the coal beds appear is sandstone and bituminous shale of the cretaceous period dipping at an angle of about 9° north-westerly. The coal is what is called and known as lignite. The mines are easy of access, and can be worked by tunnels in such a way as to get principally lump coal with little or no loss in forming pillars at all; but without a railroad connecting the mines with the Utah Southern it is impossible for the companies as yet to enter into competition with the eastern coals; but if such a railroad connection were accomplished, and there is no reason whatever why this should not be done easily and cheaply, then coal and coke could be furnished throughout Utah at a considerable less cost than at the present. Selecting the quality of coal from the different coal seams in Sanpete carefully, a very superior coke ought to be produced. The mines of the Harrisburg district are situated about 320 miles south-west of Salt Lake City. The geological formation is stratified red and white marl—sandstone, at places broken up and eroded; here and there the sandstone alternates with thin seams of clay shale, the cementing material between the sandstone is lime. Petrifications of trees, branches, leaves, and ferns, such as are peculiar to the coal formation, are everywhere in great abundance. Mr. Brede-meyer has not the slightest doubt that coal will be found in the vicinity. The Tintic mining district is situated in the Oquirrh range, about 75 miles south of Salt Lake City, and contains about 20 square miles. In the north-west part of the district, including the Eureka and Copperopolis Mines, the geological structure is limestone of the Silurian age. This limestone is considerably changed in its appearance by the great masses of eruptive or igneous rock. In the western portion of the district we observe at the base of the mountain quartzite. The ore in the north-west and western part of the district occurs in true fissures bearing north-east and south-westerly, with a very nearly vertical dip. There appear also numerous gash veins cutting the country rock in different directions, and making the whole appear as a complete network of veins. The ores here are very rebellious, containing lead, copper, gold, silver, bismuth, arsenic, antimony, and pyrites of iron and copper, varying in value from \$20 to \$360 per ton. The veins are here and there barren, the ore appearing in pockets only. In the southern part of the district the mineral-bearing formation is composed of hornblende, porphyry, syenite, and felspar porphyry containing kassiterite.

The Camp Floyd mining district commences 4 miles south of Ophir (east canyon) and about 30 miles south-west of Salt Lake City. The principal mines are situated around Lewiston, near the summit of and on the western flank of the Oquirrh range, and produce free milling ore, which appears in and is hereditary to a quartzite bed, which bed overlies the older limestone. This limestone composes the centre of the great upheaval in this part of the Oquirrh range. The lower part of the limestone overlies the shale and quartzite beds, and belongs with them to the Silurian age. The older lime beds occupy a space of about 1200 ft. between the quartzite beds. It is very difficult to determine the exact point where the Devonian and carboniferous beds commence, but it is certain that all the beds in which the ore containing quartz appear belong to the Silurian age. The lower limestone is compact and crystalline, of a dark grey colour, shows few fossils, and such as are found—as corallines and molluscs—are so changed by crystallisation that their species can only be determined by the most careful examination. The ore-bearing quartz beds have a thickness of from 10 to 68 ft. They have a hard limestone floor, and a roof of calcareous shale, sandstone, and cherty limestone (alternating), and are in their structure and appearance entirely different from those underlying the quartzite. The shaly limestone is rich in fossils of the Devonian and carboniferous ages. The character of the silver-bearing zone or belt of quartzite is very peculiar, and different in every way from a true fissure vein structure, but it shows a distinct stratification of ordinary sandstone or quartzite bedding and it is conformable to the bedding of the country rock throughout the whole district, the hanging wall being a calcareous lime shale and the footwall a dark grey limestone. These distinct lines of the quartzite bedding disappear only where the bed is crushed or brecciated by the upheaval, which facts must appear clearly beyond dispute to every careful observer. This quartzite bed is a permeable stratum of sandstone, made crystalline and vitreous by the heated vapours and chemical reagents from below, before and during the gradual upheaval of the antediluvian ridge; the overlying shale bed being permeable, the mineralised vapours were confined to the permeable and porous sandstone, changing the same slowly into true quartzite, and depositing the

silver, antimony, cinnabar, lead, and copper ores in the same. From this it will be seen that the richest ore deposits will be found there, where the quartzite is most broken and crushed under the influence of the upheaval, as the penetrations of the mineral solutions are at those points the easiest. By a close examination of the rock in the crushed quartzite deposited together with the ore, it will appear that the ore forms in many cases only a coating of the fragments, the interior being more or less barren, which indicates that the process of depositing ore continued also subsequent to the upheaval. There is no reason why impregnated beds, formed by sublimation, as the above mentioned ones, should not be as rich, valuable, and extensive as any other ore beds.

The Ophir and Rush Valley districts are situated on the western slope of the Oquirrh range, occupying a very large tract of ground of about 200 square miles. Rush Valley mining district commences at about 32 miles, west south-westerly from Salt Lake City. Ophir mining district adjoins Rush Valley on the south-west line. The formation of country rock in those districts is principally limestone, which appears everywhere in strata, cliffs, reefs, and ledges. These strata of limestone dip with the slope of the hills towards the valley, losing their course gradually in the great upheaval. Last, but not least, comes the so-called Old Reliable or West Mountain mining district. This district commences about 22 miles south-west of Salt Lake City, and is situated on the eastern slope of the Oquirrh range. The principal geological structure of the district is quartzite or vitreous sandstone and dolomite or magnesian limestone. The quartzite appears in beds of great dimensions, with thin seams or lamellae of shale which separate the strata at intervals of from 100 to 500 ft. In the southern and south-western and south-eastern portion of the district two beds of limestone, from 100 to 300 ft. in thickness, are observable from the south-east in most irregular foldings and frequent dislocations of the strata, which at present show a general strike of north-east and south-west, and dip north-west at angles varying from 20° to 80°. In several of the breaks and faults large dykes of dioritic and hornblende porphyries appear. They are extraordinary, frequent and well defined in the southern and south-western parts of the district. The presence of these igneous rocks, occupying the breaks of the strata, verifies the origin of such disturbances as have upheaved, folded, and broken the sedimentary beds. Ore deposits appear in this district:—1. As beds between the strata, forming bed or strata veins, examples of which are—Old Telegraph, Spanish Hill, American Flag, Utah, Jordan, Neptune, Revere, and others appearing and situated all in one belt.—2. As contact veins between limestone and quartzite, limestone and shale, quartzite and shale, syenite and quartzite, syenite and limestone. To this class belong the Jordan, Neptune, Grizzly, Ashland, Winamuck and others.—3. As true fissure veins in the syenite porphyry such as appear at the head of Main Bingham Canyon, beyond the Jordan and Neptune Mines.—4. As fissures or gashes breaking through the strata to which a great number of the Bingham ore deposits belong. It would take too much time and space to explain the nature, character, and the merits of the different classes of ore deposits to their fullest extent and meaning in this manuscript. The quantity and quality of ore are the only standard of value for the miner and the capitalist.

## GEOLOGY OF THE PACIFIC COAST.

SIR.—Will you kindly in next week's Journal cause a correction to be noticed in the figures which refer to the level at which the fossils are found in the former shores of the Great Basin. They should have been 5000 ft., and not 500 ft., as these fossil remains are fully 800 ft. above the present level of the Great Salt Lake, which is 4200 ft. above the Pacific. It would appear as it now stands that these fossils were below the level of the lowest depressions of that portion of the American continent. JACKSON BARWISE.  
Camberwell, March 26.

## FRONTINO AND BOLIVIA MINE.

SIR.—There is much dissatisfaction at the tardy way in which the monthly reports from the mines are issued. I believe the reports for December were received last Saturday week, the 16th inst., but have not yet been issued to the shareholders. Why this delay? The Chairman will, doubtless, be closely questioned at the next meeting on this point, as it is obviously unfair to the great majority of the shareholders.—March 28.

AN INQUIRER.

## THE LONDON COAL SUPPLY.

SIR.—I have perused with deep interest Mr. W. J. Thompson's various letters in the Journal on this head. Mr. Robert Baxter, the chairman of the South Yorkshire and North Derbyshire Coalowners' Association and solicitor to the Great Eastern Railway Company gave evidence before the Committee of the House of Commons, now sitting on the Great Eastern Railway Bill, that the vend of coal from these coal fields is capable of assuming an immense development if a lower rate of transit can be attained to the Metropolis, of which output at present only one-sixteenth part reaches London. Mr. Allport's evidence, the aide-de-camp-general of the late Mr. George Hudson, later a large screw collier owner, and without comparison the most experienced party in Great Britain in coal transit by rail, shows, as general manager of the Midland Railway, that the 9d. per ton three of the Great Eastern, bearing some analogy to the Muscovite Eastern raid, based upon a partial gradient of 1 in 400, is not exclusively the prerogative of that company, as the Midland possesses an identical gradient for its gigantic coal traffic by the Erewash Valley line, and finds it much more advantageous to work train loads little more than half the tonnage projected by the Great Eastern. The Midland have sunk 3000,000 ft. in coal wagons, and Mr. Allport shows the fallacy of the Great Eastern aspirations with as great perspicuity as the demoniacal conduct of self-styled "Holy Russia" has been at last laid bare to the uninitiated and waylaid public. With even Sir Henry Tyler's coming to the rescue with 800 to 1200 tons load with consolidated engines at low speed in America it is probable, with so great a loss of life by collisions on the lines conveying coal to London, with even little more than half the train loads proposed by the Great Eastern, and not encumbering the line, through a low speed, that Parliament will sanction the bill, promoted ostensibly with the object of effecting a saving of 300,000 ft. a year to the metropolitan coal consumers, an assumption entirely hypothetical and fully disproved in the committee room. Sir Henry, as one of the Great Eastern family, will, I presume, not stake his reputation by maintaining that an English combined passenger coal line to London can be practically and safely worked at the low speed of the American traffic with 800 to 1200 train loads per cent. With five through railways in America running parallel to the water, which latter transit is triumphant in the greatest possible degree, the rate per rail per ton per mile is 0·923 cent, whereas per canal, inclusive of dues, the rate is 0·402 cent, and exclusive of canal dues only 0·268 cent, in conformity with the annual report of the State Comptroller of the United States of America.

What more confirmatory evidence is wanting to prove that the present deplorable state of the Yorkshire and Derbyshire coal trade is entirely to be ascribed to the coalowners sending their coal to London by rail at a loss of many shillings per ton as compared with proposed shipment from Keadby, and after defraying cost of rail carriage to the Trent. The saving via Keadby would keep the pits in constant work, and the pitmen in the enjoyment of the highest normal rate of wages. It was stated in evidence that heavy goods pay 30s. a ton by rail London to Leeds, which I am informed can be conveyed, including picking up, wharfage at both ends, shipping charges, and delivery, at about 10s. a ton by water, which were this and other return traffic taken into account, would effect a further important reduction in the coal transit.

In conclusion, the Chairman of the South Yorkshire and North Derbyshire Coalowners' Association, simultaneously solicitor to the Great Eastern Railway Company, promotes a bill in Parliament holding forth a reduction of 9d. per ton in the face of a really practical plan, declared so by the very highest authority in England, to convey coal at a reduction of 9s. per ton from the pit's mouth to

the metropolitan consumers' premises, and from Keadby, minus the railway rate, leaving many shillings saving for water conveyance over Mr. Baxter's rail saving of 9d. per ton. Another Mr. Baxter, of the United States, effects on the Erie Canal a saving of quite a different character, as pre-estimated. Let the coalowners ponder seriously over such serious and reliable statements as have been submitted to them.

FACTA, NON VERBA.

## THE KEARSLEY COLLIERY EXPLOSION.

SIR.—It is stated in a local newspaper that the inquest on the man killed by this explosion is concluded, and that "Mr. Dickinson, Chief Inspector of Mines, said he had no doubt the explosion was caused by gas escaping from a fall of roof in Partington-place." And in reply to the Coroner, he also stated "that there were more fatalities in mines worked with lamps than with naked candles, as with candles miners could better see falls of roof and coal."

This appears to be a strangely garbled jumble of words, and it is difficult to believe that the Chief Inspector has been correctly reported. The case was one of explosion, and it would no doubt have been prevented by the use of lamps, this is the inference that any plain pitman would draw from the evidence. If a seam known to be fiery is worked with naked lights it appears that only a fall is required, or a door or brattice knocked down, to produce the conditions which bring about a serious explosion, the loss of forty or more lives, and great destruction of property. It will not be contended that the use of lamps would have prevented the discovery of the fall, nor that more explosions occur with the use of lamps than with candles. Perhaps it was meant that more casualties from falls of roof occur when lamps are used than when candles are used. This will be admitted by some, and questioned by others, but it is not a very important matter, at any rate in connection with the Kearsley explosion. It is also said that the jury highly praised the management of the colliery, and would not recommend the use of lamps instead of candles. It is not likely, therefore, that much advantage will be gained from the result of the deliberations of those Solons.—Newcastle, March 26.

VIEWER.

## THE KEARSLEY COLLIERY EXPLOSION.

SIR.—I see that in his evidence respecting the Kearsley Colliery explosion Mr. Joseph Dickinson, Her Majesty's Inspector of Mines, is reported to have said—"A great number of people attributed explosions to a change in the atmosphere. . . . They must discard from their minds any atmospheric change as a cause of these explosions, as it had nothing whatever to do with them. The way such changes were dwelt on was more as an excuse for deficient ventilation than anything else."

It is a pity Mr. Dobson's paper "On the Connection between Revolving Storms and Explosions in Coal Mines," published in the Proceedings of the British Association, Glasgow, 1855, has not been reprinted. It should, by good rights, form one of the examination papers of everyone entrusted with the charge of a colliery, whether as owner, agent, manager, inspector, or in any other capacity. It is also a pity that everyone who can afford it does not keep an aneroid barometer in his house. Such an instrument, with a glass revolving top and index, can be had of excellent quality for about 3/- 10s., and the attentive observation of it morning and evening, and occasionally during the day, for a few weeks would soon convince anyone that the same causes which produce disturbances in the gases of the atmosphere are also producing changes in the gases in a coal mine. And though, I suppose, Mr. Dickinson will deny this, we have no doubt there are people in England who will undertake to prove to him, and make him prove it too, by asking him such questions as whether there is an atmosphere, whether it has weight, whether that is what is meant by pressure of the atmosphere, whether that pressure varies, &c., and whether there are gases in coal mines, whether they are explosive, whether they exude from the coal, &c.

Those who refer to atmospheric disturbance as one of the causes (not by any means the sole cause of accidents in coal mines) attribute these disasters to the operation of elemental agency, with which we are as yet but very imperfectly acquainted, and our knowledge of which, therefore, it is desirable that we should increase. Mr. Dickinson, in denying that the state of the atmosphere has anything to do with colliery explosions, is doing all he can to prevent any enquiry being made in that direction; and in saying, as he is reported to have done, that "the way these changes were dwelt on was more as an excuse for deficient ventilation than anything else," throws the whole blame for them upon those in charge of the mine. I commend this aspect of the case to all concerned, owners, managers, workmen and all, Mr. Dickinson himself included.—Holloway, March 28.

WM. H. DANIELS.

## DESTRUCTION OF FIRE-DAMP.

SIR.—I have noticed several times recently the destruction of fire-damp referred to as a matter with which everyone is supposed to be familiar, yet I have carefully searched in every direction that I can think of and can find no reference whatever to the material by which this destruction is effected. I have found the communications of Mr. Arthur Wall, of Birmingham, which appeared some years since in the *Mining Journal*, and also some references about the same time to the invention of Mr. De Mat, a Frenchman, but no allusion is in any case made to the material employed.

So far as I could judge from the discussion with reference to Mr. Wall's invention there appeared to be some doubt whether the mystery did not exceed the practicability, but I must admit that the experiments mentioned were, without question, in Mr. Wall's favour. In one of these made at James-street, Bedford-row, a large box is stated to have been provided containing a charge of Mr. Wall's fire-damp destroyer. A pipe was connected with one of the gas-fittings in the room, so that the gas could be conducted to the box. The connection was made so that the gas passed into one side of the box whilst an exit was provided on the other. The reporter whom you sent there, with what I should consider idiotic recklessness, applied a lighted wax taper to the exit side, being fully convinced that the gas would ignite. Not only was ignition impossible but the taper was actually blown out.

Now, if this experiment were really *bona fide*, and it can scarcely be imagined that pumping machinery or anything of that kind would have been introduced into the box, it proves beyond doubt that the explosive character of the gas was destroyed; and what I should now like to know is by what means the destruction was effected? If the fire-damp can really be absorbed, and of course assuming that the expense is not so great as to render it impracticable to use it, I think the invention should certainly receive attention, and if the inventors of the present day commence where Mr. Wall left off it is not unreasonable to anticipate that something good will result.—Barnsley, March 26.

PHILO.

## PRIZE BLOWPIPE APPARATUS.

SIR.—The suggestion of "Blowpipe" in last week's Journal that Lether's guinea box of blowpipe apparatus may be as useful, practically speaking, as a reduced Lindke is no doubt correct; for, although a tolerable blowpiper, it will not be so convenient as to call myself a pyrologist, which might be mistaken for fiery-talker, or something of the kind, I cannot see the necessity of wasting even a guinea for any field set of blowpipe apparatus. The professor under whom I studied told a fellow-student of mine who had just bought one of Griffin's sets, which are beyond question the best and cheapest in the market, that the purchase afforded another evidence of the truth of the old saying—that certain people and their money are soon parted. The professor drew from his pocket a handsome little morocco cigar-case in which he carried, neatly packed, what he assured us were ample reagents and apparatus for a fortnight's work in the field (eight hours exploring a day), excepting the wax-lights, which he said he would only use where no other light was obtainable, as you could usually get a common candle or a lamp where you slept. The cost of the cigar-case was 2s. 6d., and of the contents 2s. 6d., and practical men need have nothing more. Those

who are fastidious about apparatus are seldom worth their salt as workmen.—*March 25.*

BLOWPIPEST.

#### ROCK DRILLS—THE CHALLENGE.

SIR.—We notice in the Supplement to the Journal of last week the remarks of Messrs. Le Gros, Mayne, Leaver, and Co. upon the correspondence published March 16, and beg to refer them to their challenge of Feb. 22, which states they are prepared to run their drills "for a month against the Barrow, or any other drill, in any mine." This was the challenge we accepted, and which has been declined by Messrs. Le Gros, Mayne, Leaver, and Co. We do not shrink from the contest, as we know the merits of our drill, and feel quite satisfied that contest between the Ingorsoll and Roanhead alone would be found both "exhaustive and instructive." All we ask for such a contest is fair play, and we think this is sufficiently shown by our letter of Jan. 26, offering to drive our drills with whatever plant Messrs. Le Gros, Mayne, Leaver, and Co., may use, even if they choose to put down their own. Their challenge and our acceptance referred to *drills*, not plant and compressors. Perhaps, too, Messrs. Le Gros, Mayne, Leaver, and Co. will inform us if Capt. Nicholls, of St. Austell Consols, is their agent in Cornwall, as we understand this is the case, and if so their choice of that mine might be accounted for.

SAFON BARNES AND CO.

*Ulverston, March 27.*

#### ROCK-DRILLS.

SIR.—We notice in the Supplement to last week's Journal an account of Mr. J. G. Cranston's rock-drill and air-compressors, and observe that the Roanhead Mines appear among the addresses given of places where they are in every day use. We are not, however, quite sure if this statement refers to the rock-drill or compressor only. If to the latter we cordially affirm that the machine is a good one, and works to our entire satisfaction, but if the reference includes the rock-drill we must in justice contradict the statement. We tried Mr. Cranston's drill underground, but found it was no "miner's tool;" its springs and ratchets so constantly required it to be sent to the surface for repairs that we discarded it altogether, and adopted the drill manufactured by Messrs. Salmon Barnes and Co., which was first tried in our Roanhead Mine, and called after it. We have found this drill to be much more effective, less liable to get out of order, and a better tool in every respect.

*Ulverston, March 28.*

KENNEDY BROTHERS.

#### WELDING CAST-STEEL BORERS.

SIR.—Knowing that you are always ready to help the working miner, I will thank you to publish the enclosed, and also any answers that may be sent, as it will be greatly valued by many hard working and persevering miners who cannot well afford these bad times, to pay a smith, but would do the work ourselves if we knew what was required:

"If any of the numerous readers will kindly send for publication in the Journal the composition used, or what is needed with the treatment for welding cast-steel borers, they would confer a favour to many who are working like myself searching for minerals, and can manage to sharpen our own tools but cannot put our short borers together."—*March 27.*

WORKING MINER.

#### THE MINING INTERESTS OF GREAT BRITAIN.

SIR.—When we compare the state of metallic mining at the present day with that of the year 1872, say five years ago, we cannot but be struck with the sad havoc inflicted on this branch of native industry consequent on the contentions of capital and labour, the political confusions arising out of the Eastern Question, the sad depression and contraction of trade and commerce, coupled with the discovery of tin ores in Australia, and the consequent diminution of prices of the article in our market. Lead mines have also suffered greatly from lowering prices of that metal, and the all but universal stagnation in trade and manufacture, not only here, but on the Continent, and throughout the whole of America, Australia, Canada, and the civilised world in general. Still, in the face of these all but unprecedented misfortunes and disasters it is most refreshing to refer to a few mines which maintain their own, and even show an advance in inherent worth and revenue over this trying period of five years. The Van paid 42,000*l.* in 1872, and 42,000*l.* in 1877; Great Laxey paid 45,000*l.* in 1872, and 30,000*l.* in 1877; while the Hultafall, Pateley Bridge, West Pateley Bridge, and West Craven Moor, the first in Sweden, and the other three situate in Yorkshire, with Monydd Gorddu, Cambrian, Blaen Caelan, Temple, Tyn-y-Fron, Grogwinion, and Bwlch promise to revive the prestige and profitable renown of Cardiganshire. But, as we pointed out years ago, the rapid exhaustion of Tankerville and Roman Gravels indicated early falling off; the first gave dividends of 14,400*l.*, and the latter 12,600*l.* in the year 1872, but none have been declared by either since 1876; in regard to Tankerville, and may last year in regard to Roman Gravels. These mines have fallen off 130,000*l.* each in market value, and evidently sell high enough now.

For the year 1872, five years ago, tin mines were in the ascendant, and at the close of the year they bore the following favourable contrast with their present lamentable position. For that year Dolcoath gave dividends amounting to 45,645*l.*, and commanded a market value of 67*l.* a share. The price has fallen off to 32*l.*, and the dividends dwindled down to 10*l.* quarterly. Tincroft from 48,000*l.* dividends, have receded to 15,000*l.* quarterly, and the price of the property fallen from 342,000*l.* to 70,000*l.* Carn Brea in 1872 divided profits of 15,500*l.*, and sold at 150,000*l.* The profits have been nil since February, 1874. The company has a large accumulated debt, and the commercial value has fallen off to 42,000*l.*, with a very remote chance of getting out of debt. Kitty (St. Agnes) has declared no dividend since 1874, against 8500*l.* in 1872, and the market value has dropped from 64,425*l.* to 8000*l.* Trumpet Consols gave dividends of 8000*l.* in 1872, and has since been abandoned as worthless. East Pool paid 7200*l.* in 1872, and has fallen down to 2*l.* a share four monthly, and the price receded from 15*l.* to 9*l.* a share, and high enough now for any prospects that the mine or the price of tin exhibits of an improving character. Phoenix in 1872 declared a dividend of 4700*l.*, and since encountered considerable expenditure and losses. The shares, 6000*l.* in 1872, with 4*l.* 3*s.* paid up, are now 12,000*l.* in number, and 5*l.* 7*s.* 3*d.* called up. The market value in 1872 was 90,000*l.*, and it now stands at 55,000*l.*, or just 15,650*l.* over the increased capital of 39,350*l.* called up under the name of Phoenix and West Phoenix Mines. Phoenix was formerly a rich copper mine, and in the aggregate gave profits of 239,950*l.*

New Pembroke in 1872 declared dividends of 2240*l.*, but has disappeared among the dead men, resulting from depressed prices of tin, commercial depression, and the utter prostration of speculative enterprise. Wheal Basset, in 512 shares, 5*l.* 2*s.* 6*d.* paid up, sold in 1872 for 60*l.* a share, and gave dividends of 50 per cent., since which there have been several calls, and the finance is still in arrear. The gross dividends to the close of 1872 were 326,656*l.*, on an outlay of 2624*l.* Botallack gave 16*l.* dividends in 1872, and worked at a heavy loss for nearly the whole period since. West Frances, from dividends of 2818*l.*, has merged into a losing concern. Terras has ceased to exist, as also North Levant; these mines for the year 1872 paid respectively 2775*l.* and 2800*l.*, and sold at 75,000*l.* and 32,000*l.* each. Penhalls, from 2500*l.*, has ceased to be profitable. Wheal Jane, which divided 2048*l.*, is now simply making both ends meet. Wheal Owles paid 24*l.* 10*s.* a share in 1872, and is now profitless. Grenville, from a dividend mine, has passed into heavy calls. South Carn Brea, from paying dividends, merged first into calls and then became abandoned. Providence, that paid 117,180*l.* dividends, on a capital of 11,569*l.*, has ceased to be worked. Lovell, which paid 1113*l.* in 1872, still continues working, yet without gains to shareholders. Wheal Margaret, formerly an important and very profitable mine, with Castle-an-Dinas, Wheal Kitty, Whisper, East Balliwickenden, and Spear Moor, have all been abandoned; as well as Great Work, St. Ives Consols, and many other great and formerly rich and prosperous tin mines. In fact, there is scarcely any department of the mining interest, excepting iron mines, which have experienced during the period of five years—1872 to 1877—such a marked and ruinous collapse as that of Cornish tin mining.

There cannot be a question that even war will have a beneficial

effect on trade, manufacture, and commerce, for nothing can prove so detrimental and crippling as ruling suspense and uncertainty in every department of the nation's products and industries. The markets both at home and abroad are wretchedly paralysed, and our productions reduced to most abnormal dimensions, while the actions and conduct of both masters and workmen are devoid of all *esprit*, or even the slightest approach to confidence; thus capital and labour fail to fructify, hence the vitality of progress is absorbed, or rendered puerile and inoperative through inanity and distrust.

Mining pursuits of all others demand active enterprise, intelligent perseverance, and indomitable confidence in the future. The hidden chambers of wealth embedded in the earth require earnest and diligent application to become discovered and rendered profitable whenever brought to light. Hence the chronic distrust of the investing public, coupled with the low prices of copper, tin, and lead, very seriously affects and depresses metallic mines. It is, therefore, with great satisfaction that we refer to the Melanear as a recent prize in copper mining, and of Pevor, Eliza, Agar, and West Godolphin in regard to tin mining, and of Pateley Bridge, where the lode at the 30 yards 6 to 7 tons of lead to the fathom; of Mynydd Gorddu, wherein important discoveries have been made; of Blaen Caelan, where the lode at the deepest points is worth 30*l.* a fathom; Tyn-y-Fron, where the lode is proved highly productive for 70 or 80 fms. in length; while Great Laxey, Van, Grogwinion, and West Chiverton are each and all expansive. Thus the future of mining is not without promise; hence let us hope and trust in an early and important revival in the prices of metals, when dividends must pour in abundance, for mines and mining never were more productive and permanent in character than at present.

R. TREDDINICK,  
Consulting Mining Engineer and Dealer in Stocks and Shares.  
Exchange, 66, Coleman-street, London, March 26.

#### PUBLIC COMPANIES, AND LIQUIDATION.

SIR.—The combination of "ignorance with conceit," to use "Creditor's" own words, was never better illustrated than in the half-column of nonsense that gentleman favoured us with in last week's Journal. It may be that "Creditor" is a loser by some company—not an uncommon thing in these days. How many there are who, taking no trouble to find out the financial position of a company before giving credit, when it is being wound up abuse the liquidator—often because they can find no other official to expend their wrath upon. To be expected to answer for the faults and mismanagement of directors and secretaries, which have eventually brought a company into liquidation, is what I have myself before now as a liquidator experienced, but it seems it has been reserved for "Creditor," "in order to prevent the ruin of joint-stock enterprise altogether," to come forward at the very nick of time with "a very short enactment" for the Legislature to adopt in order to "secure that object" unless, as he humanely says, "anything can be done to annihilate the class (accountants) altogether." Before saying a word or so on the proposed enactment, it might be as well to remind "Creditor" that, as a rule, companies have generally expended their capital and proved themselves unable to pay their debts before going into liquidation or the liquidator has had anything to do with them. The ruination and starvation of hundreds of families he speaks of has been caused long before then. Surely "Creditor" is confusing the beginning with the end, and crediting the liquidator with the delinquencies of the promoter.

And now just a few words on the proposed "very short enactment." The new lock for the stable-door after the horse has been stolen. "Creditor" says it should be provided that "in the event of any company going into liquidation the secretary of such company shall be the official liquidator, and that the remuneration of such liquidator shall in no case exceed an amount equal to the salary received by him as secretary during the six months preceding the meeting at which the liquidation is determined on, unless he proves to the satisfaction of the Court of Bankruptcy (which would be the best tribunal to decide) that he has used all diligence in the winding-up, but that it was not practicable to close within the restricted time." In the first place I would remind "Creditor" that public companies are not wound-up in the Court of Bankruptcy, but in the Court of Chancery, and although "Creditor" may think one court should be troubled with the business of another, the Legislature may think differently. Further, "the secretary of such company shall be the official liquidator." The italics are mine. Should there have been anything rather dark in the past this might be *very good* for the secretary. But all being right, suppose the secretary having another appointment in view, or from other causes, does not wish to be liquidator. Would not this compulsory clause be an infringement on the liberty of the subject? Again, as to remuneration "equal to the salary received by him as secretary during the six months preceding the meeting at which the liquidation is determined on" Now, I have myself two separate instances in which the secretaries received nothing at all during the last six months of office from want of funds. What would "Creditor" do then? Finally, the short enactment finishes with the words "within the restricted time." But what that restricted time is we are not told. The "very short enactment" would, I imagine, require a very long amendment to be intelligible.

But, perhaps, the best part of "Creditor's" letter is the middle paragraph, the one in which he alludes to accountants in general, not liquidators in particular—men who have no special knowledge, who "pump" clerks, and charge for taking lessons; who undo work done, and persistently ignore Quarter-days: who will make up balance-sheets to the 13th of April (why not the 1st?), and have so much respect for directors that when one marries commemorate the event by dating a balance-sheet on the happy day, foregoing for that purpose even the mystic 13th of April—and for all this charging fees. Truly these men must be worthy of "annihilation." Where are they to be found? In the land of fiction I expect, from whence "Creditor" has drawn so many of his facts.

A LONDON ACCOUNTANT.

#### BLAEN CAELAN MINE.

SIR.—I notice some correspondence on the above mine appearing from time to time in the Journal, and having had some slight knowledge of the mine in times past, perhaps you will kindly permit me to make a few remarks. About ten years ago, when the mine was in full swing under Mr. Balcombe's management, a considerable quantity of lead was sold from comparatively shallow depths (about 500 tons I believe), and at that time the stratum of ground was not what would be considered congenial for mineral. I recollect the late Capt. Edward Williams, of Dylife, a very experienced miner, remarking that after about 30 fms. sinking they would reach the blue killas, and they would then have either a very rich mine or a very poor one—meaning, I took it, that the lode would either become wider and stronger, or split up and disordered. I gather from the present agent's reports that the former is the case, and my humble opinion is that the lode, will continue to improve till 100 fms. has been reached. I limit myself to 100 fms., because I do not think that depth will be reached in this generation. The lead ore at Blaen Caelan has every appearance of lasting; it is like the Bronfloyd, Dylife, and Van ores, all mines that have proved rich in depth. The mine is favourably situated for working, and comparatively easy of access. In my time it was rather short for water, but there was a favourable conformation of ground for forming a large reservoir, at some little expense. I recollect an opening being made on the south lode, a little east of Bwlch-y-Garreg, by the neighbouring company, which was sunk about 4 fms., and rich stones of lead were discovered, but it was found they were outside their boundary (*i.e.*, on Blaen Caelan), and they filled it up again, after picking the rich ore out, with the waste. This south lode is to be seen in the cutting made for the road to Esgair-hir, and ought to be proved by a cross-cut from the river—not, as I saw them doing once, close under the road, and then in a most erratic way; my plan would doubtless entail a longer cross-cut, but it would ensure a thorough exploration, and when the lode was cut would give all the greater backs.

I have been told that further west than the present mine good ore was found at surface, but whilst the company have got a good lode, improving in depth every foot, they are wise not to have too

many irons in the fire. A judicious outlay of the capital they appear to have on hand will, after a little patience, enable them to enter into a permanent dividend-paying state, keeping always a good reserve of ore in front of them, and this is better than having a large sale of ore and then relapsing for a year or two, although it may not suit mines which want to force their shares on the market. My opinion of Blaen Caelan is that it is a good, *bona fide*, lasting mine, not overburdened with too large a capital, and consequently capable of yielding a handsome return to its shareholders. *Machynlleth, March 26.*

J. D.

#### MINING AS A PROFITABLE MEANS OF INVESTMENT.

SIR.—Probably when the cloud has passed off which has long been hovering over the whole commerce of the country a revival in this kind of enterprise will take place, resulting as in times past in enriching those who have the forethought to make a selection at the present low prices. A better opportunity for the outlay of a small amount of capital cannot be remembered. The slightest reaction in the price of metals must give to those who have the courage to invest a profit rarely exceeded. During the panic of 1847 and 1848 Devon Great Consols shares (before which they sold for 600*l.* and over) went down to 180*l.*; on the reaction the rise was rapid until they reached their former value, since which its history is common to all. South Frances shares were relinquished as valueless, and soon afterwards advanced to 500*l.* each. Tresavean shares at one time were wholly ignored after an outlay of 32*l.* 10*s.* per 98*l.* share, when a discovery was made, and they rose to 2700*l.* each, and gave in dividends about 4500*l.* each share. Strange to say, adjoining this mine there is one similarly circumstanced selling for comparatively nothing (about 2*l.* each) with prospects equal and possessing the same elements that were presented in Tresavean at the same depth, yet such is the apathy of the public that it is almost forgotten. Probably ere long the mining public will be taken by surprise at the discovery of a deposit of copper ore equal to its rich neighbour. This is one instance out of many known to the writer. Dolcoath is a proof of what may be done by a persevering company; the shares (19*l.*) about 30 years ago were relinquished as valueless, and shortly after were sold (after subdivision) at 2000*l.* per original, since which they have given the shareholders close upon half-a-million profit. There are young mines around this one with continued perseverance, and a further small outlay, likely to be the source of great success to those who hold to the end. The investor need not, therefore, send his money to "develop" the mining fields of America while we have such a vast amount of unexplored wealth in our own little home domain.

CHAS. BAWDEN,

*Cornwall, March 26.*

#### MONYDD GORDDU LEAD MINE.

SIR.—It was with much pleasure I read Mr. Pell's very complete and graphic description of these mines in last week's Journal. There is no question but that Monydd Gorddu will in a little time develop into a grand mine, and more than fulfil the most sanguine opinions formed of it. I expect in a few weeks we shall intersect the great ore body at the 24 below adit, and seeing that our engine-shaft is more than two-thirds sunk towards a 36, it will be understood that great efforts are being made to lay open plenty of ground to keep the new and powerful machinery fully occupied when completed. The great hindrance towards opening the mine hitherto has been the short supply of water-power. The large reservoir now being constructed at Craig-y-pistyll, and which is rapidly draining to completion will remedy this drawback, and give us ample water-power at all seasons of the year to work vigorously.

*Monydd Gorddu, March 26.* JAMES G. GREEN, Manager.

#### WHEAL UNY, AND ITS MANAGEMENT.

SIR.—The strictures of Mr. James Tresidder, mining agent, on the management of this mine call for a few remarks. In the first place he has the manliness to put his name to the letter published in the Supplement to last week's Journal; but at the same time if he recently visited the mine, as he says he has, he might, I think, without loss of dignity, have been courteous enough to have pointed out to me or to the agents on the mine the serious defects in the management before making such sweeping charges in a public paper. I hold a large interest in the mine, and would have been glad to have availed myself of his great mining experience, and should be only too glad to adopt his or any other plan, provided I could make the mine pay in these depressed times. I have not the honour of knowing this mining agent from North Devon. If, however, Mr. Tresidder wishes to show his superior ability as a mining agent, and save his calls, I think I can assist him. Perhaps he will remember that in 1874 there was an anonymous letter published in the Journal in very much the same style as that now issued. I then publicly stated through your columns that to settle the matter I was prepared to set the whole of the tin leavings at 13*s.* 4*d.* out of 1*l.* before it left the mine, and to publish the results. After some little delay the leavings were taken by a company of working men, with a tin dresser as the active partner. After several months' working the first sale was made in August, 1874, and the amount realised was 4*l.* 19*s.* 3*d.* The party has since dwindled down to one man, who has stuck to it admirably, and has made large slime pits and fixed frames similar to those recommended by Mr. James Tresidder, and the sale made for the month ending March 9, 1878, amounted to 6*l.* 10*s.* 6*d.*, which at two-thirds tribute left 4*l.* 7*s.* to the tin leavings dresser to pay his working expenses. It should be stated this tributary has probably spent 100*l.* on the floors out of his own pocket, and the agreement is that we give or take two months to terminate the contract. If Mr. Tresidder is anxious to save his calls, and show his skill as a mining agent, I can easily give the man in possession the stipulated notice, and give Mr. Tresidder the preference as a shareholder to take up these tin leavings on similar terms.

Mr. Tresidder draws on his imagination in stating that the pitwork from one engine has been sold without the knowledge of the shareholders; we have sold nothing except old iron. This avaricious mining agent says the mine should not be flooded from the surrounding mines, as there is no communication below adit; if he has ever been down a mine, and knows anything of geology or the nature of lodes, he could not fail to observe that water does flow into the mines, especially when the lodes are porous. As a matter of fact, there has been a half-dozen mines abandoned contiguous or directly adjoining Wheal Uny, and every one of these had at least one pumping engine to drain the water, and yet not one of the abandoned mines referred to is full of water to the adit; it must be, therefore, percolating into some other mine. We regret to find that our coal bills have increased considerably since the stoppage of the surrounding mines, and we cannot well dispose of our pitwork, as Mr. Tresidder mildly hints.

Again, another alleged source of mismanagement is that there have been only 10 or 12 fms. of shafts sunk. Allow me to state that a new engine-shaft has been sunk over 160 fms. below the adit, or nearly 200 fms. from surface, besides a new double skip-road drawing shaft to nearly the same depth, as well as other shafts. We have, therefore, sunk in the aggregate within the time referred to in his letter over 400 fms.

the impression it was advisable to postpone the meeting for a month, because we had hoped for an improvement in the tin market, and as the mine was improving in the western end it was considered we could do with a 5s. call at the end of four months instead of at the end of three.

WM. RICH.

## LEAD MINES.

SIR.—The letter of mine which appeared in last week's Journal I am glad to perceive has attracted much attention, both with respect to lead mines generally and the prospective mines bearing that metal brought under public notice by means of your influential Journal. Some investments have been made in consequence. I beg now to offer additional reasons for the opinion that lead mines are the best and safest investment of the day, as it was impossible to embrace the whole subject within the limits of a single letter. At no period since the great default of Turkey were foreign enterprises or credit so little popular as now, rendering it necessary for capitalists to turn their attention to home media for the employment of their resources, and at present there are signs that various forms of home investment are not so strong as they were, while mines, and above all lead mines, are looking up, and are becoming more and more entitled to confidence.

It may be said in reply to these remarks by superficial observers that during the present week several foreign Government loans were better quoted. This, however, was due to the occurrence of the bi-monthly settlement on the Stock Exchange, as in Hungarian, Russian, and Egyptian the "bears" had to buy back, and pay more for their purchases. There is no support given to foreign Government securities, which have fallen on every bourse in Europe. Turkish are worth nothing, and great distrust of the Khedive and his debts predominate and increase, although it was announced by Messrs. Fröhling and Gosselin this week that the coupon due on April 1 next, and the drawn bonds of the 1864 loan, will be paid at their office. Russian bonds went slightly up (for the reason already given as influencing the markets generally), but there is already reaction, and that the Government of the Czar will ultimately cease to pay is regarded by thoughtful and experienced men as certain. This is the case in the continental capitals. The Berlin Post, and a Paris contemporary, the *République Française*, affirms that if a war between England and Russia ensues, the latter will be bankrupt in three years. The creditors of Peru have given up all hope of retaining the guano, on the security of which their money was advanced, and which is manipulated in the interest of M. Dreyfus and the Peruvian Government. Austrian and Hungarian rents and securities are lower than ever, because of the massing of Russian troops on the frontier of Transylvania, and the clamour at Vienna for an Austrian occupation of Bosnia. It is a very short time ago when the bonds of the United States were regarded as among the safest investments in the world, but the passing of the Bland Silver Bill, the tone of the Southern members of Congress, and the avowed purpose of the leading democrats have deprived the Union of this confidence. Large numbers of bonds have been sent from London and Paris to be sold in Wall-street, and efforts of the American Government to absorb them and hold up their quotable value did not succeed for more than a few days, and in this market no business can be transacted in them. Even French Rentes drop here to such a degree as to bring down quotations on the Paris Bourse.

It seriously strengthens the position we assume that all other foreign investments, as well as Government stocks are out of favour among English capitalists. In the City of Paris loans so eagerly subscribed here and in France no dealings of any account take place. American railways are at a fearful discount. The unfortunate Erie has been brought by mismanagement, plunder, and litigation to the verge of ruin, and the telegram this week announcing the postponement of the foreclosure sale produced additional despondency. The Canadian lines, in which so much British capital is involved, have a struggle for existence. Indian guaranteed lines generally show a declining market, and the London Press unanimously state that they are entirely without animation. At the recent meeting of the Ottoman Railway Company information was given of the non-receipt of the Imperial guarantee, and in consequence the coupon due Nov. 1 last cannot be paid.

The fate of the Odessa Waterworks is irretrievable, and the same may be said of other foreign municipal undertakings, foreign banking companies, and foreign mines where British money was embarked. Under circumstances like these it is natural that English possessors of capital must seek for its employment either in our most prosperous colonies or at home. But in what direction at home? Railway shares are heavy because of strikes, casualties, the decline of exports, and of the prohibition of the import of foreign cattle. Some of these stocks are still at a high premium, but the investor at present prices could not expect to realise more than from 2½ to 4 per cent. The same may be said of Bank of England stock and shares in the leading joint-stock banks. There is confidence in this important department of investment, but it has not been improved by the failure of the private banking establishment of Willis, Perceval, and Co.

The British funds pay so little upon present purchasing prices of Consols, and New and Reduced Three per Cent., that they can only be thought of by executors, guardians, trustees, and banking proprietors, unable profitably to employ their deposits. They have gone up lately from the business transacted by such purchases, and the difficulty felt to find secure investment by those who will risk nothing and never turn their attention to the valuable channel of mining. When there is revival of trade the funds fall, being sold to procure capital for more profitable investment; and if there be war the Government must borrow, and all the Governments engaged, according to the area and scale of the conflict, and old stocks on such occasions are invariably sold to buy the new issues, and their market value by sequence recedes.

Taking all these indisputable facts into account, mining companies offer far the most eligible means of investment. It is a pity that so small a portion of the public understand and estimate this, but the circle is widening year by year, and even month by month, as the water eddies around the spot where a pebble is cast upon its surface. Most men not intimated with mining statistics would be astonished at the statement we make that mining for metals and minerals taken together, such as metalliferous properties, collieries, Cornish clay, granite, marble, stone, and slate quarries, brickfields, &c., *mira dictu*, enrich the country annually to the amount of 50,000,000.; and, contrary to what is experienced in our manufactures, there is no raw material to be paid for, there is nothing but labour, skill, and working capital to be provided, and the metals and minerals raised are essential to all other industries. In my last letter proof was afforded that great fortunes have been made from small investments, and we may now add to many a good miner, whose fortune to begin with consisted of his mattock, pick, and hammer, has amassed much wealth. Mining, then, is not a contracted industry, but a large one. It is not or ought not to be obscure, for if the miner works beneath the soil or the sea he brings the shining treasure to the light, creating conspicuous wealth. It is not unimportant, but the successful agent of war and peace, without whom the land could not be cultivated, our houses built, our horses shod or harnessed, our food cooked, our tables and our hearths furnished, ships constructed, or our people armed for the defence of our altars and our homes. From the hobnail in a clown's shoe to the brilliant which adorn the breast of beauty, or the diadem of the Queen, all is dependent upon the hard hand, quick eye, and brave heart of the miner. Where mining is active civilisation advances. The gnomes, the gloomy spirits of the ancients, were thought to dwell in mines, but the miner has poured light into their recesses, and the fiction of the gnome is gone. The metals of the British mines were not "born to blush unseen," as Parnell said of the forest-hidden flowers, nor allowed to lie concealed in the "dark unfathomed caves" of earth or ocean. The miner fathoms their depositories, and brings them from the bosom of the mountain, or from beneath the surging sea. Bad as the times are, half a million of persons are employed in connection with our mineral and metalliferous estates.

Of course there will be differences of opinion as to what department of mining it is most judicious to direct attention. At present there can be no dispute that mining for lead is the most advisable. It is more secure than any other; it is safe for the life of the worker, for the depth of the mine is less than that of other mines, and there are no deleterious gases to explode, or sap little by little the mine's life. There is opportunity for small investors to come in, because only a moderate or very limited capital is required. The products, whether lead, silver, or blende, can be sold as soon as extracted, and the smelting of lead is more scientifically conducted in this country than either tin or zinc; and at this conjunction prices of shares are low, and the prospects of high markets excellent. In my last I showed the distinction between investment in dividend-paying and progressive mines, the former returning respectable dividends at present prices, dividends in the other being deferred, the mine being prospective or progressive becoming intrinsically richer as work progresses. We would by all means recommend the investor who is satisfied with moderate but satisfactory interest immediately to buy in the former, and to persons who can wait and wish for large profits to adventure in the latter, and patiently see the enterprise to its issue.

West Chiverton silver-lead returns at present 10½ per cent. per annum upon the market price of the shares. The company has sold lead to the value of 500,000., and blende for 23,000. The dividends paid amount to 166,000., or 5½ lbs. per share, on a capital of 30,000. Shares can now be procured at 13½ to 14, a tempting and sound opportunity for capitalists, large or small. The returns are constantly augmenting, ensuring larger dividends. Roman Gravels, Vans, Tankerville, &c., offer favourable prospects to this class of investors.

In my former letter I invoked attention to the two Craven Moors (East and West), permit me to state additional facts to prove them worthy of it. They are both prospective, identical in their production, and one had almost said rivals in productiveness. They are situated near Pateley Bridge, in a district notorious for its metalliferous and mineral resources. Our Cornish lead miners are inconvenienced for want of cheap coal, none being produced in that county, nor in easy access, so that the products of the mines cannot be smelted in the vicinity. In Cardiganshire coal has to be brought from Shropshire, and the metal is sent to be smelted to Swansea or Liverpool. There is also great facility at Craven Moor for transport to and from the mine. No county in England possesses such extensive railway accommodation as Yorkshire, except Middlesex and Lancashire. Skilled labour and common labour are both abundant. The geological phenomena in the country about and on the site of the mines give certain indications of great metalliferous wealth, and actual and practical experiment has proved them to be rich properties. East Craven Moor has a capital of 30,000., in shares of 10s. each, and these are now at par, opening an easy opportunity for investors to procure an interest in an undertaking which cannot fail of success when fully developed; it will rival the shares of mines which now stand at 10s. per cent. premium. Plane, prospectus, and specimen of production, can be seen at the office of the company, where there are beautiful rocks of pure lead, for the ore is generally taken up in solid masses. The lodes have been ingeniously described as "easy and masterly." 16 of them permeate the set, all maintaining the same character. Several of them have proved rich in the neighbouring mines. The property is about a mile square, and is held by a lease for 21 years, subject to a royalty of 1½d. It is important to note that the existence, contiguity, continuity, and value of the lodes are proved by extensive workings on the back.

A very competent engineer observes—"Looking at the general features of this interesting piece of mining ground having so many lodes, all possessing the usual characteristics of lead-bearing lodes in a limestone formation, and at the excavations above and underground, proving that riches contained uninterrupted from the surface to the bottom level, one cannot resist the conclusion that ore will continue to a still greater depth, with attendant profitable results." Another authority observes—"If any property not more deeply developed can justify being recommended as certain to result in a very profitable investment East Craven Moor is peculiarly entitled to be considered such."

West Craven Moor is also a most promising prospective mine, and the words

of the last quotation concerning East Craven Moor are strictly applicable to this. Situated in the midst of favourable circumstances for fuel and transport, smelting operations being conducted in the neighbourhood, it has every facility for cheap and uninterrupted working. There are several great mines in this rich lead-bearing district, the same lodes running through them, and yielding identical results. It is one of the characteristics of lead mines, in comparison with those of tin and copper, that they do not run out, and seldom do they work off without first paying the adventures handsomely. In the neighbourhood of Craven Moor the mines virtually never work out, for some of them have yielded ore for 200 years. The West Craven yields other mineral products with lead. Thus when the Black Hill shaft was opened it was found filled with barytes, gossan, and branches of galena. Subsequently Captain Williams, writing of this edit, says—"The vein in the end of this level improves: its components are spar and barytes, and carrying solid branches of lead ore—worth 30 cwt. per fathom." Concerning the shaft which is sunk below this edit the same authority says of the two steps that "one was worth 20s. per fathom, and the other worth 25s. per fathom." In some other shafts the ore (chiefly lead) is worth 40s. per fathom. A competent observer tersely says—"West Craven Moor is one of the most promising lead mines in the country, and one of the greatest certainties." The shares are 10s. each fully paid up, and the market price is par. It would be impossible to point out anywhere two more valuable progressive mines than East and West Craven Moor.

OLD MINER.

## LEAD MINING IN SCOTLAND.

SIR.—Allow me to reply shortly to the letter from Mr. T. B. Stewart in last week's Journal. With regard to Mr. Stewart's remarks about the width of the lode at the Lossiemouth Mine very little need be said. Mr. Stewart may, or may not, approve of wide lodes, but what I take it all miners will look to is the quantity of ore, and the facility with which it can be worked; and no one will quarrel with plenty of ore whether it occurs in Mr. Stewart's favourite 5-ft. lode or in any other form. But I wish to draw your attention more particularly to the latter part of his letter, where Mr. Stewart talks about "subverting the scope of the Limited Liabilities Act," "following pernicious causes," and "gulling the public." Mr. Stewart should have made it perfectly plain that these remarks have no reference to the Lossiemouth Mine. The names of the gentlemen connected with this company are in themselves a full guarantee of the thoroughly honest and straightforward manner in which it is being brought out. It is open to and will bear the strictest investigation, from which it may be seen that the promoters get no remuneration unless the mine makes a profit of 5000/- per annum, the total capital being 30,000.

C. E.

## KESWICK UNITED SILVER-LEAD MINES COMPANY.

SIR.—In reference to a letter in last week's Journal from a shareholder in this company, I beg to state that annual reports and balance-sheets containing all the information asked for have been regularly sent for the last six years to every shareholder. Those for last year, recently issued along with the notice calling the annual meeting, held on the 13th instant, were received by all the shareholders, with the exception of two in the country, and your correspondent in the City, who have removed without furnishing me with their new addresses, and if they will not take the trouble to do so, I do not imagine it is my duty to hunt them up.

Your correspondent, who has occupied your valuable space with enquiries for information which he professes to be ignorant of, although in his possession for years, can have his copy of the directors' report and balance-sheet for 1877 either by sending for it or by furnishing me with his present address. For your information I may perhaps be allowed to add that the directors have not been paid one shilling for fees for the past six years, while during that time they, along with two or three of the shareholders, have advanced without security or the payment of interest upwards of 4000/- to carry on operations in the mines.

THE SECRETARY.

King-street, Finsbury, March 27.

## LEAD MINES IN THE NORTH—GRASSINGTON, PATELEY BRIDGE, WEST PATELEY BRIDGE, &amp;c.

SIR.—When I wrote you last week I little thought my anticipations would have been so soon verified by the great discovery since made in the Cockhill Mine, the property of the Pateley Bridge Lead Mines and Smelting Company. This goes far to confirm what I then stated, "that with present appliances and the energy and skill brought to bear this district should prove the richest in the United Kingdom."

It was a similar discovery to this some years since that brought the Grassington Mines into notoriety, and enabled the management to return to the Duke of Devonshire sums varying from 50,000/- to 70,000/- per annum for many years.

This vein, called here "The Rake," has returned shallow large deposits of ore in Cockhill, and now it is proved beyond a doubt that the ore holds down rich below the base of the hill, or water level. This should be most cheering to the enterprising proprietors of the West Pateley Bridge Mines, as they have a run of more than half-a-mile upon this lode, and I shall be much mistaken if the present workings at their Middle shaft do not, after all, show that they are opening out this same Rake vein, which is now valued in Cockhill at 6 to 7 tons of lead ore per fathom.

I am led to think that this is the case from the fact that the West Pateley Bridge Mines in the deepest workings at this part of the property are free of water, and that the whole character of the lode is the same, and produces precisely the same minerals in both properties. I believe the agent differs in this opinion, as he thinks they are upon the North Rake vein. This may be, as the lodes run close together; if so, from the discoveries already made in the West Pateley Bridge Mines, they certainly have prospects of an exceptional value, as they have yet to develop the Rake vein, now so rich in Pateley Bridge Mines.

MINE AGENT.

Skipton, Yorkshire, March 27.

## LEAD MINES IN THE NORTH—WEST PATELEY LEAD MINES, &amp;c.

SIR.—"Old Miner" and "Mine Agent" are doing good service in directing the attention of mining investors to this important district in the West Riding of Yorkshire. With facilities not to be found elsewhere, Greenhow Hill must inevitably become the most prominent, as it will assuredly be the most profitable, mining locality in the North of England.

Greenhow Hill has gritstones on its northern slope alternating with beds of shale, while on the south rises the great mass of mountain limestone to a height of 1400 feet above the sea level. The ridge (says Professor Phillips) rises into two eminences called Greenhow and Coldstones; from both of them the beds dip rapidly to the north and south, the dip diminishing as the dip from the axis augments. Many metalliferous veins cross the ridge, and are traversed by north and south lines of irregular cavities called gulps, which are full of broken portions of the bordering rock. Shales and grits of great thickness, enclosing a thin limestone, envelope on all sides the oval mass of Greenhow limestone, which is more than 100 fms. thick, the bottom having never been reached.

In these valleys are the levels of the principal mines, and here also a great part of the mining population is located. All the ground bears evidence of mine workings, old or new, and the surface is spread with heaps of stony matter which have come from the bowels of the earth, among which are immense quantities of fine white spar.

The mines have been worked from time immemorial, some having between eight and nine miles of horse levels, which are travelled by horses in bringing out the ore. Sometimes the lead is found embedded in clay, when it is easily won by the pick, but most frequently in the limestone.

Among the mines recently started West Pateley, which is being very energetically developed, will soon make its mark in this celebrated locality. The property is an extensive one, having, as I was informed, an area of nearly a mile square. It contains many rich lodes, and, although vigorous operations were not commenced until towards the fall of last year, enough, it would seem, has been disclosed to encourage a spirited development, and upon an extensive scale, judged by the work now in progress.

A liberal expedient is adopted at these mines by which all the explorations are greatly accelerated. Each miner is paid a premium in excess of the ordinary wage by accomplishing a certain amount of work in a stipulated period. This has been found to

answer most admirably, so much so that the same plan seems likely to be adopted in the other mines in the locality.

Leeds, March 25.

J. E. HARRILD.

## LEAD MINES IN THE NORTH.

SIR.—Your correspondent, "Mine Agent," has given us some valuable information about the lead mines in the Pateley Bridge or Craven district; but from my knowledge of the neighbourhood—and I am not speaking without some experience—every effort should be directed to opening out the mines in depth. Sufficient has been done to demonstrate the highly mineralised character of the lodes near to and at surface, but the valuable discoveries made at the deepest points yet reached are guarantees of continued and increasing richness. While I take exception to some of "Mine Agent's" statements I would urge the desirability of sinking with all possible speed, and open out the mines in depth, when I have no doubt great results will be realised.

MINER.

## THE ASSHETON LEAD MINING COMPANY.

SIR.—I think the shareholders have great cause of complaint against the directors of this company. Is it true the returns of lead now being made exceed those when the shares were selling in the market at 18/-, or nearly 20 times the present quoted value? If so, why do the directors withhold the information? No body of gentlemen have been better supported by shareholders, and unless they furnish us with the information, to which we have a perfect right, we must convene a special meeting to ascertain the actual position of the mine.

Far be it from me even to hint that such is the case, but it may be possible that outside shareholders are mulcted of their shares because ignorant of what the mine is doing.

As the Stock Exchange element is strong in this company, it may be that shares are being purchased from those who, if better informed, would themselves be buyers instead of sellers.

A SHAREHOLDER.

## HINGSTON DOWN CONSOLS.

SIR.—The correspondence published in the Journal some little time since between Capt. Richards, of Devon Great Consols, and two of the directors of Hingston Down Consols, has led to another peculiarity step on the part of the promoters of the movement with regard to the recent changes in the management of the above mine. During the period of the severe illness of Capt. Richards his son devoted the whole of his time and attention to his father's affairs, and all matters of business passed through his hands. The official correspondence was conducted by him in accordance with his father's instructions, and as is usual in similar circumstances the letters were signed by him on his father's behalf.

Founded on these simple facts a report has been issued from a London office, and authenticated by the signature of a secretary of mines, to the effect that it was within the knowledge of certain authorities that the letters in the recent correspondence were neither written nor signed by Capt. Richards. The imputation conveyed in this statement being so unmistakeable, and the intent so palpable, an explanation or a retraction of the charge has been called for by the solicitor engaged in the case. In the answer received it is admitted that the statement was made, but that no insinuation was intended. It now remains to be seen if no insinuation was meant to be conveyed what was the object of the promulgation of the statement.—March 26.

A SHAREHOLDER.

## COED-MAWR POOL MINE.

SIR.—A great discovery was made at this mine last week; we cut a splendid lode west in the 28 fm. level, greater in value than anything ever seen in this part of the country; the present end is worth about 80/- per fathom. This is the more valuable owing to the length of ground opened up in the 20 fm. level, 50 fms. ahead of the present end, giving us 50 fms. of solid ground, with 8 fms. of backs. In the level east of Mallett shaft we have a rich lode with 8 fms. of backs for more than 60 fms. This week driving the cross-cut north in the 20 we have cut a lode running parallel with the main lode, at present worth fully 20/- the fathom; this discovery is all the more valuable as the ground is all maiden ground, giving us 20 fms. up to surface for stopping; these are new discoveries. All other points in the mine are improving, and promise well for the owners. I have sampled this week again, which makes the second since January. Another important feature is that the lead from this mine commands a much higher price than the ore from any other of the many mines in this district, and from 40s. to 50s. per ton more was realised at the last sale in January, many of the other mines selling at the same time. I believe this mine will very shortly become one of the best in Wales.

Llanrwst, March 27.

W. MC FARLANE.

## CORNISH SILVER-LEAD MINES.

SIR.—There is evidently a disposition to pay more attention to silver-lead mines in Cornwall than has been for the last three or four years. Several mines have been started recently, and notably amongst these is the Great Wheal Rodd Silver-Lead, which has just been brought out as a limited company, with a capital of 12,000/- in 24 shares, and there is every prospect of its becoming a rich mine; it is in the neighbourhood of the celebrated Wheal Mary Ann and Trelewlyn Silver Lead Mines, and the ore taken from it is of precisely the same character. A deep adit level has been taken up from the large stream of water which flows through this sett, and is driven about 28 fms. It is expected that the lode will be intersected in about three weeks. Budge's shaft, which has been sunk 12 fms., will then be unwatered, and the deep adit level continued on the course of the lode as rapidly as possible, where backs of more than 30 fms. will be gained. Capt. George, of Marke Valley Mine, says—"The lode is 3 ft. wide, and in the present bottom is composed of gossan, friable spar, flockan, mudi, and silver-lead ore; the stratum is a light clay-slate, and is very favourable for exploring." Very favourable reports have also been received from three other well-known mine managers.—Liskeard, March 27.</p

ing his house, when the ladder on which he was standing, and which he himself had made, broke, and he fell on a stone, and died instantly. *March 21.*

#### D'ERESBY MOUNTAIN MINE.

SIR.—I notice in Messrs. W. Reynolds and Co.'s Financial Monthly for March the following, which requires correction:—"Capt. Bennetts is the manager of D'Eresby Mountain Mine; by his advice and under his guidance the success of that mine has been assured, and the shares of that company have risen from 10/- to 60/- each in price since November last." Now, Sir, as one who knows I beg to differ with Messrs. Reynolds and Co. respecting the above paragraph in relation to the management of this mine, and would advise them in future, for their own personal interest, to issue facts which will bear the light of day, and I would say that had the directors and shareholders as a body been satisfied with the management of Captain Bennetts he would have been retained as the agent to superintend the working of the mines. After due consideration the choice fell on Capt. John Roberts, of the Vale of Conway Lead Mine, in whom the proprietors have the greatest confidence, feeling assured that in such hands their property is in safe keeping. Such statements issued in circulars I consider are likely to prove injurious not only to the manager, who has been appointed to that post for nearly a year, but to the property, unless contradicted. I may further say we look to Captain Roberts, the manager, for the proper working of the mine, and the results which one and all are in hopes will follow his explorations as soon as he gets the crushing and dressing machinery erected, and dressing-floors properly laid out.

NUNQUAM NON PARATUS.

#### SOUTH DE ERESBY MOUNTAIN.

SIR.—You opened your columns on Saturday last to a gentleman who, in my opinion, abused your well-known courtesy in publishing legitimate criticisms on any subject bearing on mining. As this gentleman has brought a direct charge of dishonesty against me I hope you will give me a like space to meet that charge. Captain Roberts states that he sent to my firm for a copy of our circular, and we had not "the common honesty to send him a copy, or return the stamps he enclosed." He then points the moral by saying, "What does this imply? I need not say." Now, Sir, it implies that either Capt. Roberts does not use ordinary care in getting his letters posted, or he deserves the epithet he wishes to brand us with, for we have never received any communication from Capt. John Roberts, and he would have shown better taste had he renewed his application before making a charge so serious in the columns of your widely-read paper. In regard to the arguments of more public interest he is just as much at sea.

He first confounds our circular with the prospectus, and we should be unjust to the directors if we did not say they had no knowledge whatever of the issue of our circular until Capt. Roberts' letter appeared. Again, he misstates our premises, and proves on the false premises he sets up that, according to our argument, the working of this mine would show a loss instead of a profit. We stated that 1 ton of lead per fathom, according to high mining authorities, and notably that of Capt. Roberts' employer, would at 13/- per ton show a net profit of 8/- per fathom.

No one knows better than he does that, although some part of the 2½ miles of lodes contained in South de Eresby Mountain is worth nothing, a great portion of it would probably be worth 3 tons per fathom, as is the case in the same lodes worked by the D'Eresby Mountain Company. Capt. Roberts' disclaimer "that he did not wish to depreciate the real value of the mine," but simply rushed into print in the interest of the public, would be amusing were it not likely to prejudice the minds of your readers against one of the most promising mining sets in North Wales. *W. REYNOLDS.*

*London, March 28.*

#### SOUTH DE ERESBY MOUNTAIN.

SIR.—I have carefully perused the letter which appeared on this subject in last Saturday's Journal, but I cannot determine whether the confounding of the company's prospectus with the statements made in Messrs. Reynolds' Financial Monthly is the result of wilfulness or of carelessness. Capt. Roberts suggests, probably unwittingly, that an improper use has been made in the company's prospectus of the reports written by himself and Capt. Bennetts. It is only necessary for me to give this statement an emphatic denial. The prospectus and the reports appear in the Journal of the 2nd inst. The fallacy of Captain Roberts' statement can be shown as clearly by a perusal of them as can the fallacy of the assertion (already pointed out by me) that South de Eresby Mountain Mine is not on D'Eresby Mountain by a personal inspection of the property. I may add that I do not in any way desire to detract from the real value of D'Eresby Mountain or D'Eresby Consols' set, but I am satisfied South de Eresby will prove second to neither of them. It possesses more important intersections, and its geological formation is indicative of great wealth. *J. SMITH, Secretary.*

*Queen Victoria-street, March 28.*

#### KINGSTON CONSOLS, AND TYLLWYD MINE.

SIR.—I am glad to learn that Mr. Forrest has been unanimously reappointed secretary of the New Tyllwyd Mining Company by a general meeting of shareholders, and that the directors who dismissed him have been forced to retire. It now remains for the Kingston Consols Mining Company to reappoint him as secretary of that company. I consider him to be an active and able secretary. All the time he was with Kingston Consols the mine improved from month to month in its sales of ore, but since he ceased his connection the ore sales have decreased. I only hope, if the Kingston directors fail to reappoint him, that he will submit his whole case to the shareholders without delay, and he may depend upon us carrying him through as triumphantly in the Kingston as we have done in the Tyllwyd. I trust neither the shareholders nor Mr. Forrest will let this matter rest. *March 28.*

A SHAREHOLDER IN BOTH COMPANIES.

#### COLLAPSE OF THE KIT HILL TUNNEL SCHEME.

SIR.—This great undertaking, that was started a few months since with such a blast of trumpets, has suddenly collapsed. Is it possible that such a great enterprise as this should be started without any company or capital? Looking at the affair from a practical standpoint, one cannot help thinking that there never was any real intention of putting the tunnel through. The idea of starting an adit level, 7 feet by 4, and calling it a tunnel; I suppose you could not say less than 10 feet by 8, and then the adits are started both sides from the bottom of the valley. I want to know where is all the stuff from the so-called tunnel to be dumped? and how is all the water therefrom to be utilized to such an advantage as held out in the prospectus?—*Callington, March 27.*

A COUSIN JACK.

[For remainder of Original Correspondence, see to-day's Journal.]

ANNEALING FURNACES.—The invention of Mr. GEORGE HATTON, of Kidderminster, consists in constructing annealing furnaces in such manner that the trolley or truck, which forms the movable bottom of the furnace, and carries the articles to be annealed, shall be kept cool and not enclosed in the furnace, whilst at the same time the furnace is kept air-tight. With this view he constructs a trolley, the body of which is filled in with fire-brick blocks, and the iron frame or body is furnished on the angles formed by the bottom and sides with a beaded flange, which flange when the trolley is in action engages in a metal groove formed in a curb plate supporting the inner walls of the furnace; the flange and groove are not in immediate contact with each other, but there is a space between them to receive sand, which acts as a packing medium, and prevents cold air from entering the furnace whilst at work; the trolley or movable bottom being in place, the doors close on to the fire-brick blocks on the top of the trolley, level with the furnace floor, leaving the roadway and wheels supporting each trolley or movable bottom open to the outer air, so that a free current passes underneath.

#### Meetings of Public Companies.

##### D'ERESBY MOUNTAIN MINING COMPANY.

A meeting of shareholders was held at the offices, Gracechurch-street, on Thursday,—Mr. J. Y. WATSON, F.G.S., in the chair. Mr. C. B. PARRY (secretary) read the notice calling the meeting. The CHAIRMAN read the following report of the directors:—The directors, at their first general meeting, have to congratulate the shareholders upon having one of the most promising mines in Wales. When the company was formed for working it the chief point of interest was the No. 3 adit level, which had to be driven about 20 fms. to get under the course of ore which had yielded large quantities of lead in No. 2 adit; several fathoms have been driven here, and the lode has produced good lead, and is still an important point in the mine. This, however, important as it is, was thrown into the shade a few months ago by the discovery of the course of ore in the great Gorse lode in the No. 4 adit, upon which, since November last, six men have broken 15 tons of leadstuff. Some months ago two of the directors, Messrs. Watson and Lamb, visited the mine, and having fixed upon the spot for the dressing-floors near the mouth of No. 4 adit, they ordered that level to be cleared, and a tramway laid along it for bringing the ores raised in No. 3 and other levels above, down to the dressing-floors, and in making this tramway in No. 4 the course of ore on the Gorse lode was discovered. Considerably below this level is the deep adit No. 5, and this is being cleared out to get under the course of ore in No. 4, and may shortly result in important discoveries. Mr. Lamb has been to the mine again within the last few days, and expresses his opinion that the agents have rather undervalued the Gorse lode. He adds, that if No. 5 level turns out as good as expected the present value of the mine would be doubled. There are other important lodes in the sett which will be developed in due course.

It will thus be seen that the mine is a series of five adits, driven into a hill, where they intersect well known rich lodes, running some east and west and some north and south, and these from No. 5 adit will have a depth of backs of 100 fms. Thus the mine can be worked without pumping machinery, and at little cost compared with most mines, as the ores have only to be broken and trammed direct to the dressing-floors. These floors are in course of preparation. Two water-wheels, a stone-breaker and crusher have been purchased, and the directors hope in a few months, and without any call upon the shareholders for more money, to be making good and profitable returns. The statement of accounts which will be submitted to you shows a balance of assets to Feb. 29 of 1332, 15s. 8d. Great as the prospects are at No. 4 level, the agents in their report add that from what they have already seen in No. 5 they should not be surprised if they have a course of lead there superior to anything yet seen in the mine. Mr. Ashmead, the auditor, offers himself for re-election.

The CHAIRMAN said there was one point not mentioned in the report to which he would refer—the subdivision of the shares. It had been represented to the directors that it would be advisable to subdivide the capital of the company into 10,240 shares of 1/- each, instead of being as now 512 shares of 20/- each. But he found there was a strong feeling on the part of many shareholders against subdividing them, and certainly his own opinion was that they should remain as they were. He might mention that Mr. Jehu Hitchins had just returned from the mine, and reported that he had seen nothing like it since he was in the Van, that the returns of lead could only be limited by the dressing powers, and that they would shortly be in a position to make large profits. (Hear, hear.) Investors, therefore, did not see why they should subdivide the shares just to suit the convenience of a few. (Hear, hear.)

Mr. C. B. PARRY then read the following report from the agents:—

*March 26.*—The following is a brief, yet detailed, report of the work which has been accomplished on the mine, together with its present position and future prospects. We forward also plans and sections, which will illustrate the report, and give you an idea of the mine, which words could not do.—No. 1 Adit: We have driven and stopped here altogether 13 fms. 8 ft. 6 in. on a splendid lode of blonde mixed with lead (galena and carbonate), and as rich gossan as can be seen. This was suspended till we could obtain better facilities for working by bringing in the deeper levels and dressing by putting up machinery.—No. 2 Adit: This we have cleared for a distance of 80 fms., and also cleared and secured a winze about 5 fms. deep. We have at this level in the roof some good stopping ground for lead and blonde, which will be available for working as soon as we can get a communication between this and the No. 3 adit, and as far as we can judge from what we can learn from the appearance of the ground, and also the last men that worked there, we shall have better stopping in the bottom.—No. 3 Adit: Here we have put in 80 fms. of tramway, and have driven 14 fms. 4 ft. 6 in. This was commenced with a view of getting under the winze at No. 2, and effecting the communication aforesaid. We have driven for some distance, as you are aware, through a very hard and poor rock, but for the last 5 or 6 fms. driving we have had a lode varying in value from ½ ton to 1½ ton to the fathom of lead. The breast of the end at the present moment is rather poor, but there is a leader of lead in the bottom about 6 in. wide. We have about 1 fm. more to reach the perpendicular of the winze. When this ground is spent we intend putting up a rise to communicate with the winze, which will give us facilities for stopping both here and at No. 2.

No. 4 Adit: Here we have cleared in all about 300 fms. of levels, and have laid the tramway from the intersection of the Hafna lode to the dressing-floors—a distance of 212 fms. We have driven on the Hafna lode 8 fms. 4 ft. 6 in. This lode is 12 ft. wide, and has an appearance especially characteristic of lead, and on the hanging wall it has been productive of as much as ½ to 1 ton of lead per fathom. We might here keep this in your remembrance—that this lode has been abundantly productive in the Hafna Old Mine on the west, and we have here a run of ¼ mile or more in this sett, and as we drive east from this point we shall intersect the lode in No. 3 (Fuchaslas lode), Harker's lode, and several others, so that we shall not only be proving the value of this lode, but we shall be cutting those lodes aforesaid at a deeper point than they have yet been seen. We consider the driving of this level to be a splendid venture, and one that can scarcely fail to give entire satisfaction. On the Gorse lode we have cleared about 100 fms. of levels and cross-sections, and have discovered a fine course of ore just on the intersection of the east and west lode. This lode produces about 3 tons of lead per fathom, and on the north end of the discovery it is worth 5 tons of blonde, and if this continues as it has been for the last five months we could, from this place alone, nearly supply our crusher with constant work. This lode has been cross-cut about 40 fms. south of this point from one side to the other, showing its width to be in that place from 10 to 12 fms. On the heading side, at this point, a winze has been sunk, which we cleared, as far as we could go down for want of ventilation, about 8 fms. through a good mixture of lead and blonde, and which would pay for working when a communication is made between No. 5.

No. 5 Adit: Tradition informs us that in the bottom of this level, as well as above, there are fine crosses of lead, but we wanted more trustworthy dates before venturing to involve the expense of clearing it in order to prove whether it is true or otherwise. On finding the lead at No. 4 to correspond so nearly to that described by the old men at No. 5, as also a close examination of the debris heaps, gave us confidence in the undertaking, and with your advice we commenced in earnest clearing from the extreme outlet, after having cleared up one of the shafts as far as we could go with the water. We cleared and made new about 80 fms. of the level, letting down a great quantity of water, and hoping that we might proceed with the clearing at a point nearer the course of ore. We resumed the clearing of the shaft, and we found still stronger evidence that the lode was rich at this point when last worked, as there are splendid rocks of almost solid lead mixed up with the debris. This shaft seems to have been sunk on the hanging side of the lode, and a great part of the lode still stands not taken away, and we should not be surprised if we get here a course of lead superior to anything that we have yet seen in the mine. We are now under the necessity of clearing another shaft, which we shall accomplish in a few days, and hope that this will let down the water as to enable us to go through the level for a great distance. We are getting on rapidly with the building of the crusher-house, and the masons have to be off the ground in six weeks more. We shall be, previous to that time, to begin to fix the water-wheel, which is just ready for erection, and afterwards proceed immediately with the putting in the crusher, and laying out the floors, which will take from three to four months from the present time. We are still growing more confident as to the future prosperity of the mine, as our first report, which were considered by some to be over sanguine, are daily being verified.—JOHN ROBERTS, WILLIAM BENNETT.

Mr. DAUKES said he was sure the meeting would be pleased if Mr. Jehu Hitchins, one of the oldest and most experienced miners of the day, would give his opinion regarding the mine. (Hear, hear.)

Mr. JEHU HITCHINS said he had just visited the property, and fully endorsed everything which had been said regarding the excellent prospects of the mine. He might sum up what he had to say by stating that it was his opinion that the returns of lead from the lode, provided the lode turned out as he expected (which he saw no reason to doubt), would be only limited by the power of dressing. They could break it in almost any quantity—any reasonable quantity. There seemed to be two different kinds of lead—there was a fine-grained lead, which was very heavy, and that must be 200 fms. from where they cut the large lode, and were now working upon. There was evidence that the lode was very large and strong, with very large rocks of lead and blonde.

Mr. DAUKES: I believe there is wonderful gossan there?

Mr. J. HITCHINS: There is everything indicative of produce, and you have the produce too. I was one of those who inspected the Van Mine, and advised the purchase of the mine. I and Mr. Watson were underground there together, and I have seen nothing to equal this since I saw that. (Cheers.)

The CHAIRMAN: It was in consequence of Mr. Hitchins and myself being underground in the Van that I thought it would be satisfactory if he went down to this mine, and so at my request he went down on Monday.

Mr. C. B. PARRY then read the accounts.

The CHAIRMAN then moved that the directors' and agents' reports, and also the accounts, be adopted, printed, and circulated.—Mr. DAUKES seconded the resolution, which was put and carried.

On the motion of the CHAIRMAN, Mr. Ashmead was re-elected auditor for the current year, with a remuneration of 5 guineas.

Mr. F. F. WILSON asked how long it would take to clear up the No. 5 adit?—Mr. J. HITCHINS said that would depend to a great extent upon how much it had fallen together. They were getting on as fast as they could.

The CHAIRMAN said they had really got through all the difficulties.—Mr. J. HITCHINS said it had not been cleared for the last 25 years, so they might naturally suppose there were some obstructions to overcome, although the water was flowing through it now.

Mr. F. F. WILSON: But it is cleared to the first of these shafts?

Mr. J. H. CROFTS: There is a shaft cleared up which I have pressed them to make a permanent shaft in case there should be an obstruction in the adit. For some time you will be able to raise as much lead as you can dress.

Mr. LAMB said the shaft was 80 fathoms from No. 4 level.

The CHAIRMAN: The shallow shaft has been cleared.

Mr. J. H. CROFTS said that with his friends the Baron de Crèvecour and M. Feillet, two French gentlemen who held a considerable stake in the mine, and who were present, he was leaving for the mine that very evening, accompanied by one of the first mining engineers of Paris, in the employ of the French Government, with the view of satisfying themselves, at their own expense, as to the richness and value of D'Eresby Mountain and some other mines in the neighbourhood.

The CHAIRMAN: I need scarcely say that we shall be happy to give those gentlemen every facility for thoroughly examining the mine, and only regret the Baron did not take my advice and visit it some months ago.

Mr. J. H. CROFTS said that as the business of the ordinary meeting was over, he begged to propose a cordial vote of thanks to the Chairman and directors.

The resolution was seconded, and carried unanimously.

The meeting was then made special, for the purpose of passing (if approved) the following resolution:—"That the present capital of the company, instead of being in 512 shares of 20/- each, be and is hereby sub-divided into 10,240 shares of 1/- each."

The CHAIRMAN said he had already expressed his feeling on the subject—that it was not advisable to subdivide the shares, but it was a matter entirely for the meeting to deal with. To be in order, he would formally move the resolution, and then if it were objected to an amendment could be formally proposed and passed.

Mr. LAMB said he would second the resolution, in order that it might be formally laid before the meeting.

A short conversation ensued, in which Mr. CROFTS, Mr. DAUKES, and other shareholders expressed an opinion that it was not advisable to subdivide the shares.

Baron de CREVECOUR, speaking on behalf of French shareholders, expressed a similar opinion, and regretted he had not taken the Chairman's advice and gone into the mine earlier.

Mr. FOSTER, with the view of having the question definitely settled, moved, as an amendment, that the shares remain as they are.

Mr. CROFTS seconded the amendment, which was put, and carried unanimously.—The meeting then broke up.

#### WHEAL OWLES MINING COMPANY.

At the meeting, on March 22, the accounts for sixteen weeks ending Dec. 1 showed a balance now against the adventurers of 22,448. 7s. 1d. A call of 12/- 10s. per share was made. Work performed during the sixteen weeks:—118 fms. 3 ft. 3 in. driven in levels, and 43 ft. 2 ft. 8 in. sunk in shafts and winzes; 36 pares stowing for tin on tutwork; 10 pitches working on tribute. The following report was read:—

*March 29.*—It will be observed that the cost is 200/- in excess of the previous account, which was intimated would be the case in my last report. We have managed to keep up our returns within a fraction, the weight of which has been disposed of at an average of 371. 1½s. per ton, being 35s. less than last time. Our loss on the sixteen weeks' working, in addition to the bankers' charges, is shown in the financial statement as over 400/-; but we have copper, pitch-blende, carbonate of bismuth, and arsenic unslod, which I think will cover that amount. I scarcely know how we could have done so well with the present miserably low price of tin. We have kept going our exploring points, and have expended more money in opening than in the previous sixteen weeks. I am glad to add that the mine is in thorough working order, and every item charged up. I think our cost will be less next time, and we shall try to keep up the returns of tin.

Wheal Owles.—Our prospects in this part have improved since my last report. The 90 west, 116 west, and 136 west are opening paying tin ground. The 125 west, 148 west, and 160 east are driving, but are unproductive.

Wheal Edward Cliff.—This part is still looking promising. In the 80 cross-south we have a small lode, which contains a little yellow copper. We have made no discovery in the cross-cut at the 60, but are still hopeful. The 60 east is opening fair tin ground. In the 60 west the lode is poor, though large and promising. We have abandoned operations at the 65, as this level is so little below the 60, and are pushing with all possible speed the sump winze, which is now sunk 19 fms. below the 60. The whole distance has been in good tin ground, with a little copper; the lode at present is worth 10/- per fm. We are also sinking a winze about 5 fms. east of the sump winze, which is opening fair tin ground. In this part we have raised some pitch-blende, a portion of which we have sold at about 55/- per ton. We think

largest holder of mine shares west of Penzance, spoke in eulogistic terms of the purser, and then mentioned that, from the Chairman's description of the operations of the mine by the aid of the sections on the walls, it appeared that a large number of lodes were converging on Old Wheal Owles, and he took that as indicating that they would form a junction. Of course, the first entry on granite was destructive of mineral; but he believed by continuing they would get at the root of it. It looked to him as if Wheal Owles would prove as rich a mine under the sea as Botallack, and he had that confidence in the future that if they held on their tin they would again resume a proud position, and receive far in excess of the price they paid for their shares. There was no doubt in his mind that the tin in Australia and New Zealand was simply the deposits from the disintegrations of the surface, which had been going on for thousands, perhaps millions, of years. The tin had been washed into gullies and courses which were now being exhausted, and that very rapidly. The fact was that the superabundance of labour that had been sent from England and America to Australia had been used in the development of the tin fields; but, upon a review of trade and the opening up of other industries, a large portion of the tin fields would be given up, never to be resumed again. There was great hope to be gained from the large increased consumption of tin. Fifteen years ago it was 17,000 tons, last year it was 34,000 tons. Instead of despairing, they ought to be glad in the interests of society that Australian discoveries had been made, for if they had not been made a few would have been benefited at the cost of the many. China was now taking the whole of the production of the Straits; and, looking at the population of China and India and of Africa, three-fourths of whom were without the conveniences of tin pans and other utensils, he could not see there was any reason to despair in the prospect of such a field of consumption.

Mr. JUSTICE, of Hayle, the engineer of the mine, said he admired the pluck of the purser in carrying on the mine and stocking the tin, and hoped that he would not sell his tin until he could get that better price which he was sure would come. He was astonished that it had been so long delayed. Tin producers throughout the world were, as a rule, losing at the present price, and that could not continue for any great length of time. A speedy return to improved circumstances was therefore probable, and the adventurers would reap the reward of the purser's spirited policy.

Dr. HARVEY spoke in warm terms of the noble and manly way in which Cornish adventurers had met adverse times. A rich reward was, he hoped, in store for them.

Mr. H. WADDINGTON proposed "The Health and Success of our Agents," and, in doing so, referred to the use of boring machines in mines. In a short time they would have half-a-dozen at work in Wheal Agar. For years he had been a strong advocate of their use, although the prejudice against them was so great that, unless one was prepared to doff jacket and do the work, it was impossible to ensure that success that ought to be ensured. In spite of the produce the boring machine had proved a success where there was sufficient system to keep them going. In mines with small lodes they could sink and cross-cut with the borer, and thus accomplish in twelve months what others would take five years to open up. In some mines a profit was being made with tin at 3*s*. to 3*d*. a ton, and that could only be done by superior intelligence being brought to bear. When a better price came they would see a better state of things than they had ever seen before. At Wheal Agar they intended to wind the stuff from the mine, and pass it through the stone breaker to the stamps without any shovelling whatever. It was found that stuff could be stamped at Tincroft 20 per cent. easier if it had passed through the stone-breaker than if it had been broken by spalling. There was no need for them to sit down and despair.

Capt. S. BOYNS, Manager of Wheal Owles, responding, said agents required sympathy as well as the rest, for it was not a pleasant thing for agents to have to pay low wages. The men had borne it better than in any other district in the country; there had been no strike, which was very creditable, and made them proud of their county. He was very glad to hear Mr. Waddington speak with so much heart, and to endeavour to put a little life into them. But, when he spoke about boring machines, it should be remembered that, whilst in St. Just they had to be content with lodes worth 5*s*. to 6*s*. per fathom, at Wheal Agar they had a lode worth 10*s*. per fathom. If they had such a lode as that in Wheal Owles they had a chance to make things shine, even at the present price of tin. He should like to see the day when St. Just would be able to employ boring machines. He had quite made up his mind that the Illogan district was going to beat Australia and Tasmania, for not one single lode had been discovered either in Australia or New Zealand. What was supposed to be a lode proved only to be a crevice filled up with tin we had down, and Mount Bischoff had been driven under without discovering the lode. In conclusion, he said it was no new thing to economise at Wheal Owles.

#### NEW TYLLWYD SILVER-LEAD MINING COMPANY.

A general meeting of shareholders was held at the company's offices, Gresham House, Old Broad-street, on Tuesday.

The meeting was of quite an informal character, the sole object being to formally sanction a compromise made between the company and two of the directors, by which the company is to a great extent relieved of its financial difficulties, so that there is now a strong inducement for the shareholders to arrange for the bringing in of further moneys for the development of the property.

It appears that in connection with the winding up of the Tyllwyd Silver-Lead Mining Company, Mr. D. Forrest, one of the liquidators, made certain charges and claims against two of the directors, on the ground of the acceptance by them of money and vendors' shares for the promotion of the company, they having agreed to accept, and afterwards having filled, the offices of directors of the company. In replying to the charge certain counter charges were made, and as expensive and complicated litigation appeared likely to result the liquidators to avoid this litigation—and with a view to put on a more satisfactory footing the property of the New Tyllwyd Silver-Lead Mining Company (Limited), in which they believe all the Tyllwyd shareholders without exception are more or less interested, and without further discussing legal rights—conditionally arranged terms.

On the one hand there is to be an absolute withdrawal and release of all claims of every kind against the two directors, and the settlement of all disputes relating to the formation of the company or the rights of the liquidators or the shareholders collectively or individually against them. On the other hand, in consideration of this, a mortgage for 12,000*l.* over the property of the new company, and all existing rights thereunder, is absolutely extinguished, and they further provide a sum of money for the extra costs of liquidation.

The business of New Tyllwyd meeting was to pass extraordinary resolutions, similar to and confirming resolutions which were proposed to and passed at the meeting of shareholders of the Tyllwyd Company, in liquidation, pursuant to the notice of the joint liquidators. In addition to these extraordinary resolutions, the accounts and balance-sheet, showing a debit balance of 1994*l.* 7*s*. 10*d*., were submitted, as being the balance-sheet of the company up to Dec. 20, 1877. This balance-sheet was proposed as being the balance-sheet in substitution for that forwarded to the shareholders with the directors' report of Jan. 9, 1878, and resolutions were passed with reference to the adjustment of Mr. Forrest's claim, upon the footing of the items which appear in the balance-sheet now submitted. A resolution was also passed reappointing Mr. D. Forrest the secretary of the company. The two directors placed their resignations in the hands of the shareholders, and only hold office until other directors have been appointed in their places.

The shareholders may be congratulated upon the arrangements effected, since practically it reduces the cost of the mine to 3000*l.* in shares, and 23*s*. 9*s*. 7*d*. liabilities taken over, and reduces the actual debt balance to 794*l.* 7*s*. 10*d*., an amount which there should certainly be no difficulty in raising, in addition to the working capital required for bringing the concern into a profitable position; and the two directors may likewise be congratulated upon having come so honourably out of what promised to be a protracted and unpleasant course of litigation, which could have profited nobody. It may be hoped that henceforth the progress of the mine will be smooth and profitable to all concerned.

#### ROMAN GRAVELS MINING COMPANY.

The following report from the directors will be read at the meeting of shareholders on Wednesday:

The directors' report presented at the last general meeting, in July, 1877, explained the various circumstances that had prejudicially affected the company's business since the close of the previous financial year; any lengthy comment or explanation of the statement of accounts now submitted is, therefore, rendered unnecessary. It will be seen by a reference to the profit and loss account that the receipts in the 12 months ending Feb. 28 last amounted to 28,442*l.* 15*s*. 27*d*.5*s*. From the sale of 21*s*. 9*s*. tons of blend, your directors regret that the figures should compare so unfavourably with those of the previous year when it will be remembered the total sales amounted to 35,920*l.* 6*s*. or 7175*l.* 11*s*. more than those now under consideration. The difference is due to two causes—to a decrease in the quantity of lead ore sold (partly counterbalanced by an increase in the blend sales), and to the very serious fall that has taken place in the price of lead ore.

The monthly sales are set out in detail in the accounts, and show the continuous depreciation that has been operating against the company during the whole of the year, and, as will be seen, the average price realised per ton, which in 1876-7 was over 15*s*. has fallen to 12*s*. 15*s*.

The expenditure at the mine, and for royalty, management, &c., amounts to 22,077*l.* 18*s*. 6*d*., or about 50*s*. less than in the previous year, thus showing a gross profit of the 12 month's working of 6491*l.* 18*s*. 6*d*.. From the balance brought from the old profit and loss account, 5691*l.* 18*s*. 6*d*., must be deducted the bad debts that have been referred to as doubtful in former reports, 1884*l.* 14*s*. 3*d*.. The directors still hope that a portion of this may be recovered, but they consider it advisable under the circumstances to write it off at once, as it might otherwise tend to mislead the shareholders, while as it is any dividend received from the estates of the defaulting firms will appear distinctly as such in subsequent accounts.

Out of the 10*s*. 5*s*. profit thus shown a dividend of 9*s*. 6*d*. per share, free of income tax, was paid on May 27, which absorbed 5162*l.* 15*s*. leaving 5081*l.* 9*s*. un-

appropriated. This your directors recommend should be disposed of in the following manner—3037*l.* 10*s*. to the payment of a dividend of 9*s*. per share, free of income tax; 1500*l.* carried to a reserve fund; and the balance, 543*l.* 19*s*., carried forward to the next account.

It will be noticed that an alteration has been made in the capital account by writing off the amount transferred at various dates from the revenue to meet the expenditure upon permanent works. The charging this expenditure to capital has long ceased to be anything more than a matter of account, as the working capital raised for the development of the mines has been spent; the directors have, therefore, deemed it advisable to close the accounts so far as this is concerned.

Capt. Arthur Waters' report, dated March 15, fully details the present working and appearance of the mine, and to it the directors beg to refer you for information under that head. In accordance with a wish expressed at the last general meeting regular monthly sales have been made, and judging from Capt. Waters' report there does not appear to be any doubt that these sales, which for the last four months have consisted of 180 tons of lead ore and an occasional parcel of blend, will be at least maintained. With a view to the more speedy development of the mine a trial is being made with the Ingersoll rock-drill, worked by compressed air. Your directors are sorry to say that the trial so far has not proved so satisfactory as was anticipated, but they considered it would be unfair from the part of the shareholders now at their disposal to condemn a machine that is reported to have done good work elsewhere. The trial is still in progress.

The fact that the last sale of ore only realised 11*s*. 15*s*. per ton does not encourage a hope that the coming financial year will be a very prosperous one in the annals of the company, but a reference to the past is in some measure reassuring. In October, 1871, the month's produce was sold at 11*s*. 17*s*., the lowest point reached, while from that time the price of lead ore steadily rose, till about 18 months after the ore realised over 17*s*. per ton. The directors heartily hope that history may repeat itself, and that at the next annual meeting they may be able to congratulate their fellow shareholders upon more satisfactory results than they can in reviewing the year ending Feb. 28, 1878.

In accordance with clause 74 of the Articles of Association, Mr. Robert Wilson retires from the direction. He offers himself for re-election to the seat thus vacated. Mr. Peter Watson is a candidate for the auditorship.

#### FOREIGN MINING AND METALLURGY.

The Belgian coal trade appears to be profiting to some extent from the improvement observable in Belgian metallurgical industry. The improvement thus far established in the Belgian coal trade seems, however, to be rather prospective than actual. Thus deliveries are still being made upon a comparatively small scale, but consumers being under the impression that they will not be able to obtain hereafter the very advantageous conditions now possible show less hesitation than hitherto in concluding contracts. Prices are still the subject of a good deal of discussion; but, upon the whole, they are firmer. M. Jlignard has translated from the English a brochure on the mineral wealth of Japan from the pen of Mr. Henry Munroe, professor of geology at the Imperial University of Tokio. The mineral wealth of Japan is at present only imperfectly known; it appears, however, to consist of numerous valuable coal beds. The coal presents itself under all forms—turf, lignites, anthracite, &c. In the coal basin of Ishikari, Japan, there is said to be as much coal as would employ the present staff of men engaged in coal mining in Great Britain for two centuries. Rich deposits of ironstone of very good quality are also met with in Japan.

A strike among coal miners has just terminated at Monceau-les-Mines, but another has broken out at Decazeville. The cause of this latter strike is a reduction of 10 per cent. attempted to be enforced in wages by the Decazeville Forges Company, which states that the selling price of coal has fallen 16 per cent. since 1867, while wages have even advanced in the same period. Under these circumstances the company cannot profitably carry on its operations unless a reduction is enforced in the amount paid for labour. The miners insist on receiving the rate of wages formerly paid them, and so matters stand at present. As regards the general condition of the French coal trade, the sale of coal is still very restricted. The dead season has commenced, and may be expected to become more decided every day. No important movement is anticipated in the French coal trade until September, 1878.

A slight advance has taken place in iron upon the Paris market, but in the Nord, the Haute-Marne, and the East of France there has been but comparatively little business doing. It is not only quotations which are bad, but buyers are also scarce. It is hoped that the Chamber of Deputies will be enabled to discuss the question of customs duties before April 15, but if it cannot be so discussed those interested in the subject will have to wait patiently until after the Easter holidays. According to the Treaty of Commerce concluded between France and Italy towards the close of 1877, French iron and steel rails entering Italy, and intended to be used for railway purposes, will pay a duty of 1*s*. 4*d*. per ton. French forged iron in axles, anchors, &c., entering Italy will pay a duty of 2*s*. 16*s*. per ton. The Tramways and General Works Company (Limited) is about to let contracts for the construction of tramways at Calais and St. Pierre, the length of the tramways to be thus executed—which will involve, of course, the consumption of a certain quantity of iron—will be about 2*1/2* miles.

Quotations in the Belgian iron trade are considered to have shown rather more firmness; but, at the same time, there is still very keen competition in business, the smallest order being sharply contended for. Merchants' iron has been the most in request. A steam motor for tramways, constructed by the Belgian Metallurgical and Colliery Company, has made several trips during the last few days on the Bois-de-la-Cambre and Schaerbeek line. We understand that the Montigny rolling-mills, belonging to M. Dellsyo, will be brought into activity again early in April. A contract will shortly be let at Brussels for the reconstruction of the railway station at Courtrai. The work will involve an outlay of about 15,200*l.* The Falunee Collieries Company (Courcelles) has been paying this month a dividend of 1*s*. 4*d*. per share.

#### THE SCOTCH MINING SHARE MARKET—WEEKLY REPORT AND LIST OF PRICES.

During the past week there has not been any improvement in business, and indeed there is scarcely the probability of such an event so long as political affairs continue in the present position; but it seems to be the general opinion that before long some solution, peaceful or otherwise, is bound to be arrived at. The usual fortnightly settlement intervened this week, and particulars of the business then done are given below. Transactions now being entered into are for the new account, April 12. In shares of iron and coal concerns, Boilekow, Vaughan, A., have declined 2*s*. 6*d*. per share, and Monkland 2*s*.; Omoo and Cleland unaltered. Thorps' Gawber Hall more often on a vague rumour that the company is about to close their pits. A small lot of Chapel House 17*s*. per cent. debentures have been done at 9*s*. The meeting of Darlington Iron is to be on March 29, and that of Benhar on March 30. Bilbao are at 2*s*. 1*d*. Boilekow, Vaughan, A., 58*s*; ditto, B., 35*s*. Cannock and Huntington, 8*s*. Chapel House, 55*s*. to 60*s*. Charles Campbell and Co., 5*s* dis. Darlaston 5 per cent. debentures, 3*s*. East Cannock, 10*s*. Ebbw Vale, 7*s*. Hamstead, 5*s*. dis. John Brown and Co., 12*s*. dis. John Ball and Sons, 60*s*. Midland (new), 30*s*. dis. Munt Metal, 77*s*. New Sharston (pref.), 7*s*. to 7*s*. Northfield 7*s*. Parkgate, 12*s*. dis. Pelsall, 10*s*. Rhymer (new), 5*s*. Sandwell Park, 12*s*. Sheppbridge, 19*s*. dis. Spofforth Lane, 6*s* to 3*s*. Staveley, A., 18*s*. prsm.; ditto, C, 7*s*. The Horsley, 50*s*. dis. Walsall Wood, 50*s*. West Cumberland, 7*s*. West Mostyn (pref.), 25*s*. Whitington and Sheepbridge, 8*s*. Workington Malleable, 12*s*.

In shares of foreign copper concerns the principal dealings have been in Tharsis, which show a reduction of 35*s*. on the old, and 20*s*. on the new shares for the week. The shares were at one time in demand on a rumour that the dividend was to be 20 per cent., and sold from 23 to 28*s*. but the price gave way, and it was intended late yesterday that the directors had resolved to recommend a dividend at the rate of 17*s*. per cent., carrying forward a balance of 785*l.* The annual meeting is to be on April 18. The dividend for the previous year was 22*s*. per cent., with a balance of 10,658*l.* English and Australian Copper are at 25*s*. Hultafall, 7*s*. to 8*s*. Kapunda, 1*s*. dis. New Quebrada, 37*s*. 6*d*. Rio Tinto 5 per cent., 58*s*; Yorke Peninsula, 5*s*. to 7*s*.

Shares of home mines have been very quiet. The last sale of Glasgow Copper ore on the 21 inst., 210 tons, realising 487*l.* 12*s*. 6*d*., or an average of 46*s*. 5*d*. per ton, compared with 240 tons at 69*s*. 6*d*. last month, while the sales in the corresponding month for some years back have been—in 1877, 240 tons, at an average of 89*s*. 8*d*.; in 1876, 260 tons, at 117*s*. 2*d*.; in 1875, 24 tons, at 9*s*. 2*d*.; and in 1874, 250 tons, at 78*s*. This is the third sale for the company's current year, and the falling off in the proceeds as compared with the same three sales last year, is 119*s*, but it must be kept in view that the quantity sold this month could have been larger had it not been for the breakage in the machinery, which is since put right. It has been decided not to proceed with the formation of the new company, which was to take over the Bampfylde owing to their being some legal difficulties in the way. At the Berchavon annual meeting it was resolved to get a report on the property from Messrs. Taylor, and to advertise it for sale as a going concern, or otherwise dispose of it at a special meeting for the purpose. It is thought Wheal Grenville shares will have a good rise. Cambrian shares are unaltered. Combermarie are at 2*s*. 6*d*. East Van, 5*s*. Great Laxey, 19*s*. to 20*s*. Killifret, 2*s*. Leadhills, 7*s*. Parry Mountain, 9*s*. 6*d*. Penistruel, 4*s*. 2*d*. Rhosneigr, 30*s*. to 35*s*. South Condorrav, 11*s*. to 11*s*. Tankerville, 7*s*. 6*d*. West Chiverton, 18*s*. West Tankerville, 12*s*. 6*d*.; and ditto (pref.), 2*s*.

Shares of gold and silver mines quite neglected. Richmond 2*s*. higher, the week's run being \$100,000. The produce of Don Pedro for the first division of March is 2200 tons. St. John del Rey profit for February (6700*l.*) is less than previous month's. Almada and Tiritio has no profit for February, but the reports of the new lode are satisfactory. Almada are at 10*s*. Chicago, 2*s*. 6*d*. Eberhardt,

6*s*. Emma, 1*s*. 6*d*. Flagstaff, 13*s*. 9*d*. Frontino, 32*s*. 6*d*. Javall, 6*s*. 6*d*. Pestarena United, 3*s*. to 6*s*. Santa Barbara, 26*s*. South Aurora, 2*s*. 6*d*. to 6*s*.

Oil companies' shares were at one time in demand, but have since been rather offered on the reduced "bear" account disclosed at the settlement. Uphall and Young's Paraffin are each 5*s*. lower. Bank Hall have been done at 5*s*. 6*d*. and the new shares are at par to 5*s*. prem. Runcorn Soap and Alkali, 6*s*. 6*d*.

Shares of miscellaneous companies are totally devoid of animation. London and Glasgow Engineering are now quoted ex div. In Wagon shares Scottish (new) are 6*s*. lower, at 8*s*. 6*d*. Others unaltered. Scottish (old) shares being 11*s*. 6*s*. 3*d*. and Midland 16 to 17*s*. Chemical companies' shares are the turn better, and only sparingly offered, especially Lawes' 7 per cent. (pref.) Langdale's are 9*s*. to 10*s*. Lawes', 7*s*. to 7*s*. and Newcastle, 4*s*. 9*d*.

**THORP'S GAWBER HALL COLLIERIES (Limited).**—This company's trading account for the half-year ended Dec. 31 last shows a gross profit of 825*l.*, and had the price of coal not been on average 7*s*. per ton less it would have been over 3600*l.*, and enabled a small balance to be carried over, after paying the dividend on the preference shares. As it has turned out, however, the result of the half-year's operations shows a net loss of 19*s*. which added to the previous debit balance of 1*s*. with 4*s*. arrears of income tax, and 31*s*. being damages awarded in favour of Mr. Peacock, make together 1070*l.* of deficiency. The report does not state whether the dividend on the preference shares is cumulative or not, if it is 11*s*. must be added to the above 10*s*. to show the total debit balance. The company's action against Messrs. Alexander and Hill has been decided in favour of the company, but the defendants have since filed a petition for liquidation by arrangement. The directors have

valves are provided and operated in the usual or any desired manner. The usual and well-known means are provided for keeping the cylinder cool.

### Registration of New Companies.

The following joint-stock companies have been duly registered:

**MINERAL CORPORATION OF GREAT BRITAIN** (Limited).—Capital 80,000, in 10, shares. To acquire mineral property in England. The subscribers are—E. Feuiller, 11, Rue Lafitte, Paris, 10; A. Dulterne, Steevelope, Department Du Nord, France, 10; B. Bourthoule, Paris, accountant, 10; E. A. Mare-Carrier, Paris, engineer, 10; J. Crofts, 1, Finch-lane, clerk, 1; W. Arthur, 10, Holland-road, Kensington, merchant, 1; H. E. Vickers, Whitehall-place, accountant, 1.

**CAROLINA MINING COMPANY** (Limited).—Capital 25,000, in 10, shares. To acquire certain mines in the mineral district of Carolina, Province of San Luis, Argentine Republic. The subscribers (who take one share each) are—J. Frendelburgh, Buenos Ayres; A. S. Bowen, St. Neots, engineer; C. W. Barlow, 97, Piccadilly; C. Brownlow, 7, Mining-lane, merchant; T. Jacobs, Gracechurch Buildings, commission agent; J. C. Rait, Marylebone-lane, printer; J. Thornburn, Pleyle-street.

**BRISTOL AND WEST OF ENGLAND CANADIAN LAND MORTGAGE AND INVESTMENT COMPANY** (Limited).—Capital 500,000, in 25, shares. For the investment of capital in various descriptions of property in Canada. The subscribers (who take 100 shares each) are—W. H. Miles, Ham Green, Somerset; C. W. Edwards, 90, Redcliffe-street, Bristol; L. Fry, Clifton; J. Lucas, Bristol; M. R. King, Bristol; W. Smith, Bristol; E. J. Thomas, Bristol.

**NATIONAL FIRE INSURANCE CORPORATION** (Limited).—Capital 1,000,000, in 50, shares. To take over the business of the National Fire Insurance Corporation (Limited), now in voluntary liquidation. The subscribers (who take one share each) are—H. Lofts, Mount street, Grosvenor-square; W. H. Warner, Mount-street; E. M. Barry, 24, Oxford-square; G. Goldney, 46, Hill-street, Berkeley-square; F. Mortimer, Eccleston-square; J. A. M. Coke, 14, Piccadilly-square; H. A. Hunt, 54, Eccleston-square.

**AUSTRALIAN LAND AND INVESTMENT TRUST** (Limited).—Capital 1,000,000, in 100, shares. To invest in property in Australia. The subscribers (who take one share each) are—J. M. Stuart, 12, Queen Victoria-street; W. Scott, Glasgow; J. M. Wright, 73, Jermyn-street; John Watson, 70, Bishopsgate-street; John Beattie, Teddington Park; J. F. Power, 35, Cranfield-road, Brockley; W. W. J. Walker, Melbourne.

**EQUITABLE ASSURANCE COMPANY** (Limited).—Capital 50,000, in 11, shares. To carry on the business of an accident assurance and guarantee company. The subscribers are—W. C. Morris, Bridge Chambers, Blackfriars, 10; P. Smees, 172, Holloway-road, 10; H. Scott, New Southgate, 10; John Jennings, 4, Belvoir Villas, Tufnell Park; T. A. White, 1, King's Armaryard; T. W. Nichols, Muswell Hill; J. Slater, Forest Gate.

**MOTIVE POWER AND TRACTION COMPANY** (Limited).—Capital 55,000, in 100, shares. To acquire the right to work the letters patent granted to Major F. E. B. Beaumont, for improvements in motor engines worked by compressed air. The subscribers are—F. E. B. Beaumont, 7, Grosvenor Mansions, 3; F. J. Bolton, 19, Grosvenor Gardens, 3; T. J. Bewick, Haydon Bridge, Northumberland, 1; J. Jorsey, Newton Hall, Stockfield-on-Tyne, 1; J. Hick, M.B., Myton Hall, Whalley; D. Brown, Haltwistle.

**HOCKLEY HALL AND WHATLEY COLLIERIES AND BRICKWORKS** (Limited).—Capital 100,000, in 50, shares. To take over the Hockley Hall Collieries, in Warwickshire. The subscribers are—G. W. Horwood, Horne Hill, S.E.; gentleman, 20; C. Barries, Old Quebec-street, Hyde Park, gentleman, 20; J. Gutteridge, J.P., Dunstable, Beds, 1; C. Seymour, Kingswood-road, Penge, 10; J. H. Dorner, 164, Kennington Park-road, solicitor, 5; W. Johns, 6, Bedford-place, Croydon, 5; G. J. Miller, Bute Lodge, Turnham Green, clerk, 5.

**ASIATIC STEAM NAVIGATION COMPANY** (Limited).—Capital 500,000, in 100, shares. To carry on the general business of a steam navigation company. The subscribers (who take 100 shares each) are—G. H. Morreson, 6, Dale-street, Liverpool; A. M. Turner, Dale-street, Liverpool; T. H. Ismay, Water-street, Liverpool; W. Imrie, Water-street; H. V. Harland, Belfast; C. W. Kellogg, Liverpool; L. Young, 64, Cornhill.

**PROPRIETARY HOUSE AND LAND CORPORATION** (Limited).—Capital 100,000, in 50, shares. To acquire property and carry on business as a land and building company. The subscribers (who take 20 shares each) are—W. Bond, Cavendish Villa, Ealing; J. Haughton, Great Berkhamsted; C. Pulmer, Twickenham; H. Potter, Barnes; H. Saunders, Bridge-street, Blackfriars; F. Warren, 38, Parliament-street; C. Woodroffe, Combe, Surrey.

**BOLTON ROAD QUARRY COMPANY** (Limited).—Capital 3000, in 50, shares. To acquire a quarry at Wavertree, Lancashire. The subscribers are—J. G. Martin, Castle-street, Liverpool, 10; W. Bullen, South John-street, Liverpool, 10; R. Mayne, North John-street, Liverpool, 10; J. W. Broadbent, Liverpool, 1; R. Mayne, Brounlow Hill, Liverpool; W. Broadhurst, North John-street, Liverpool, 5; W. P. Plow, Liverpool.

**INDIAN CO-OPERATIVE AGENCY** (Limited).—Capital 20,000, in 1, shares. To carry on the general business of a co-operative supply company. The subscribers are—W. Drew, Centre Park, S.E., 200; T. Wollam Holland, Cliftonville, Brighton, 100; L. Cowan, Bedford, 20; T. M. Raynsford, Barnet, 50; T. W. Mercer, Hurst-pierpoint, 50; G. Donnell, Kingston-on-Thames; R. Moore, 1, Walbrook.

**COMMERCIAL MILLS, BLACKBURN, COMPANY** (Limited).—Capital 50,000, in 100, shares. To carry on business as cotton-spinners, &c., in Lancashire. The subscribers, who take one share each, are—W. Speady, Chorley; J. Speady, Chorley; H. Simpson, Kirkham; J. C. Fisher, Blackburn; G. Shaw, Oldham; C. W. Hoone, Accrington; J. R. Beard, 7, George-street, Manchester.

**IMPROVED INJECTOR.**—The injector is according to the invention of Mr. JOSEPH HALL, of Manchester, composed of a cased body, made of brass or of any other suitable metal. It is provided with a nozzle immediately in front of an orifice leading to an air chamber. The latter is fitted with a valve, operating automatically, whereby the air is relieved and a vacuum created prior to the fluid being forced into the receiver by the pressure of steam through the centre of nozzle. The injector is placed overhead in the fluid. Steam enters through the supply pipe and creates suction by the escape of the air at automatic valve, and the energy of steam forces the water through the orifice into the receiver, and then into the boiler through the back pressure valve, the water and steam having sufficient energy imparted to open same.

**TELEPHONIC COMMUNICATION.**—The vibrations of the atmosphere, which result from the human voice or from any musical instrument, are made to increase or lessen the electric force upon a line by opening or closing the circuit, or by increasing or lessening the intimacy of contact between conducting surfaces placed in the circuit at the receiving station. The electric action of one or more electro-magnets causes a vibration in a tympan, and produces a sound, but this sound is greatly increased by mechanical action. Mr. T. A. EDISON, of Menlo Park, New Jersey, has discovered that the friction of a point, already in contact with a properly prepared and slowly moving surface, is much increased or lessened by the strength of the electric wave passing at such point of contact, and from this variation in the friction greater or less vibration is given to the mechanism that produces or develops the sound at the receiving station, thereby rendering clear and distinct the sound received, and which otherwise would not be audible. In the receiving portion of the instrument the tympan is acted upon directly by an electro magnet or through an armature, or the tympan is provided with an arm extending out over a slowly moving surface or cylinder, and the electric current

passing at the point of contact increases or lessens the friction, and produces the vibration of the arm and tympan in proportion to the difference of friction developed between the arm and moving surface by the passage and cessation of the current through the chemically prepared paper, preferably moistened with a salt of mercury and an alkali. This feature is capable of very extended development in telegraphy, the clearness and extent of sound produced by the receiving tympan exceeds anything heretofore attained in acoustic telegraphs.

### UNIVERSAL SYPHON PUMP.

The enormous advantages to be obtained by the more judicious utilisation of the principle of the syphon was explained by Mr. Mouatis in the *Mining Journal* many years since, and although the results achieved did not quite fulfil the inventor's anticipations, enough was done to convince him that the principle was correct, and that it only required development. Mr. G. J. Hambruch, of Berlin, has now made some further improvements in the same direction by applying a syphon-like column of water for the purpose of lifting water, and also for securing an air motion, and likewise claims an improved mode of steam condensation, by which the water column takes the action of an air-pump. A pipe with unequal arms is placed vertically, and fixed to the ground; the pipe can be made of sheet or cast-iron, or even wood for pumps of small draft. The semi-circular connection of the arms is of the most convenient form, the water not being exposed to a great contraction in its flow, but other forms of connection can be used. The water arm is mounted at its top with a valve which opens to the inner side of the pipe, and another valve which opens to the outer side, carrying further at the top a reservoir to receive the lifted water, which from thence flows away through the delivery pipe. In this reservoir is placed a condenser, which is fixed or screwed with its lower part to the outer valve. The condenser is, therefore, put in connection with the water arm, but the communication takes place only on one side, while another valve opens only at the bottom, and prevents the water in the pipe from entering the condenser. There is a pipe fixed to the reservoir, which connects the condenser with a revolving slide-valve. The steam arm is closed by a cover, which carries a semi-circular box, the latter communicating with the inside of the arm through an opening made in the cover. About the centre of the box is fixed horizontally the revolving slide-valve, which is constructed on the Wilson principle, and is therefore unloaded. The axis of the revolving slide-valve traversing the box carries a sector-shaped weight, to which a rod is fixed, and passes into the steam arm through the opening in the cover. This rod bears at its top a collar and at its end a nut. With it is connected the float or tell-tale valve, made of wrought-iron, which nearly fills in diameter or width the steam arm, nevertheless bears sufficient clearance to move freely up and down. A pipe connects the revolving slide-valve to the boiler, and another pipe to the condenser. The steam passes from the pipe into the channel of the shaft, and enters from there into the box and the arm, while other channels communicating one with the other through an opening, and being always in communication with the pipe, put the arm in connection with the pipe when the slide-valve is in the position caused when the rod has been altogether drawn downwards, and the shaft has been turned to the right; while the former position takes place when the shaft is turned to the left, and the rod is placed in its highest position, it is clear that any kind of unloaded slide-valve, piston, or valve gear can be used.

For putting the apparatus in operation both arms and the receptacle are filled with water, so that the float is lifted. The buoyancy of the float, which pushes against a collar, turns the revolving slide-valve to the left, establishing thereby the communication between the steam pipe and the arm. The steam enters the arm, pressing against the liquid contained in the arm, as well as against the float, which is compelled to descend. In the same manner as the water column or liquid descends, re-ascends and enters through a valve into the reservoir, and is conveyed through the pipe. The float in its descent knocks against one of the nuts, draws the rod downwards, and turns the revolving slide-valve to the right, establishing thereby the communication with the pipe, and consequently also with the condenser. The steam entering into the condenser condenses itself through the cold sides of the condenser, producing a vacuum in the arm. The valve being connected with the water reservoir where the water is drawn from the outer atmospheric pressure will now press the water into the pipe, from where it will through a valve enter into the arms, rising until the float knocks against the collar. It turns then the revolving slide valve to the left, establishing thereby the communication with the steam pipe. The steam presses again upon the column of water or other liquid, and the water formerly lifted flows away through the valve and pipe, and the so described action of the apparatus begins again. When the column of water descends in the arm the water in the condenser produced through the condensation goes through a valve into the pipe, the water column acting, therefore, as an air pump, keeping the condenser free of water. The lift of the apparatus depends upon the capacity of the vacuum in the condenser; it will, therefore, be necessary if the water has to be lifted to a great height—say, nearly to such a height as the atmospheric pressure is able to carry—to apply a condenser of appropriate large sizes.

**APPARATUS FOR CUTTING COAL.**—The object of the invention of Messrs. GIDLOW and ABBOTT, of Hollywood-Heaton, Lancashire, is to provide apparatus or appliances to facilitate the under-cutting of coal in mines, which shall be simple in construction, effective in operation, and economical in maintenance. For this purpose they employ in combination a worm wheel receiving motion from any convenient power, preferably from a compressed-air engine, to give motion to a toothed wheel or disc, which in its turn gives to-and-fro motion by means of a crank pin and connecting rod to a cutter bar working in guides. The framework for supporting this mechanism may be supported on wheels, so that it can be run along the face of the work to be cut; and retaining and other devices, such as are well known in coal-cutting machinery, may be adopted.

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“5. Its having an automatic feed, giving it a steady motion, &c.  
“6. Its greater steadiness and absence of jar and vibration experienced in other drills, which is very destructive to their working parts, &c.  
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Obtained the PRIZE MEDALS at the “ROYAL EXHIBITION” of 1851; the “INTERNATIONAL EXHIBITION” of 1855 and 1874, in London; at the “IMPERIAL EXPOSITION,” held in Paris, in 1855; at the “INTERNATIONAL EXHIBITION,” in Dublin, 1856; at the “UNIVERSAL EXHIBITION,” in Paris, 1867; at the “GREAT INDUSTRIAL EXHIBITION,” at Ashton, in 1869; TWO MEDALS at the “UNIVERSAL EXHIBITION,” Vienna, in 1873; and at the “EXPOSICION NACIONAL ARGENTINA,” Cordova, in South America, 1872.

**BICKFORD, SMITH AND CO.** of TUCKINGMILL, CORNWALL; ADELPHI BANK CHAMBERS, SOUTH JOHN-STREET, LIVERPOOL; and 85, GRACECHURCH-STREET, LONDON, E.C., MANUFACTURERS AND ORIGINAL PATENTEES of SAFETY-FUSE, having been informed that the name of their firm has been attached to fuse not of their manufacture, beg to call the attention of the trade and public to the following announcement:—

EVERY COIL of FUSE MANUFACTURED BY THEM HAS TWO SEPARATE THREADS PASSING THROUGH THE COLUMN OF GUNPOWDER, and BICKFORD, SMITH, AND CO. CLAIM SUCH TWO SEPARATE THREADS AS THEIR TRADE MARK.

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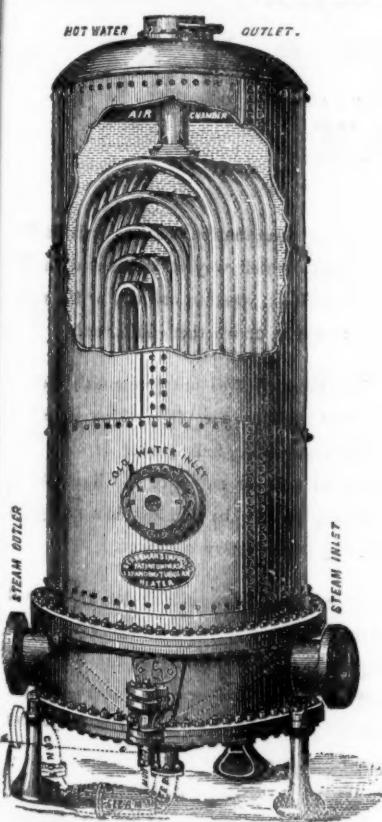
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Having purchased the Engineering Business lately carried on by R. BERRYMAN AND CO., at 23, Congreve-street, Birmingham, and 28, Wilson-street, Finsbury-square, London, have removed the whole to their Works at TIPTON, to which place ALL COMMUNICATIONS SHOULD IN FUTURE BE ADDRESSED, and where the BERRYMAN HEATER can be seen at work, and in every stage of manufacture.

Being the SOLE MAKERS and PATENTEES of these CELEBRATED COAL SAVERS and EXHAUST STEAM UTILISERS, and having remodelled and greatly improved them, adding largely to their HEATING SURFACE and WATER CAPACITY, J. W. and Co. have put down a special plant, which includes an entire new set of improved patterns, enabling them to offer these FEED WATER HEATERS to the public at

**GREATLY REDUCED PRICES.**

This arrangement of BRASS TUBES of a great length giving an enormous HEATING SURFACE makes this HEATER not only the MOST POWERFUL ever invented, but its FIRST COST PER FOOT OF HEATING SURFACE IS LESS THAN HALF THAT OF ANY OTHER. It will condense the whole of the Exhaust Steam from the Engine if required, and entirely does away with the NOISE and BACK PRESSURE from exhaust pipes.

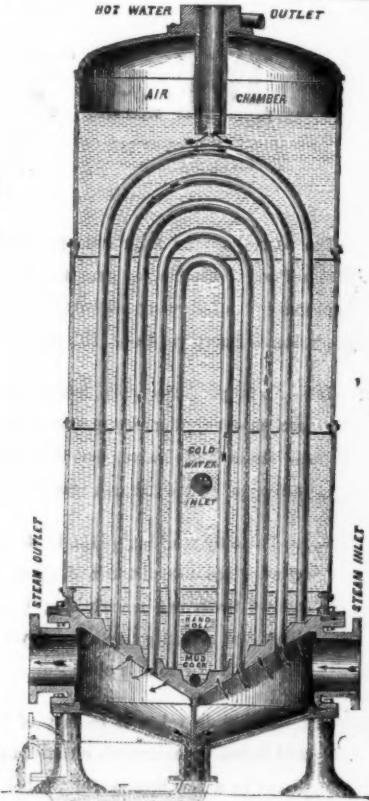
ALL THE TUBES ARE OF SPECIALLY PREPARED SOLID DRAWN BRASS AND COPPER; both ends are expanded into the bored holes of the same Tube Plate, METAL TO METAL, and every tube is free to expand and contract independent of each other. Leakage is impossible, as, when the tubes are once fixed, nothing short of cutting out will remove them. No scurf adheres to the tubes because of the difference of expansion between COPPER and BRASS. The inside of the Heater can be washed out by means of the mud cock and hand hole whilst at work.

Only one pump or injector is required, and as the Heater is placed between the pump and the boiler, the water is forced, COLD, into it, and passes out at the top HOT into the boiler direct. Where the WATER WORKS PRESSURE is sufficient no pump or injector is needed.

The water being heated to BOILING POINT UNDER PRESSURE in the Heater, a saving of from 20 per cent. to 25 per cent. in fuel is effected; the disastrous results of grease in boilers are also avoided, the sewage and other loose matter in the water being deposited in the Heater, the acids are liberated there instead of in the boiler.

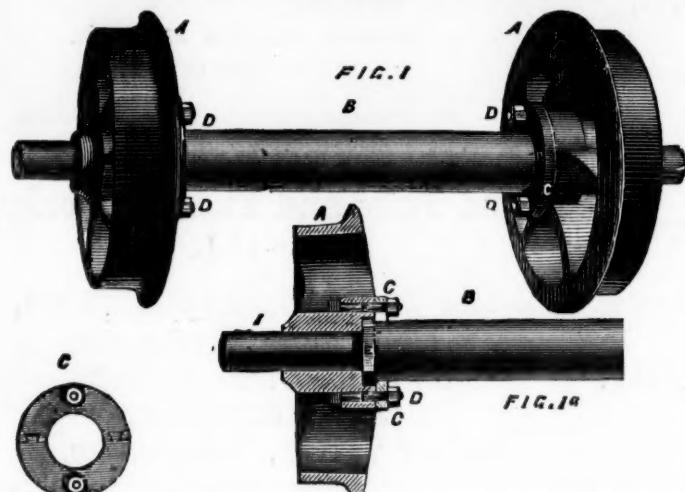
Every part can be lined with BRASS, COPPER, or LEAD, as may be required in special cases for heating water or any kind of liquor in large quantities for CHEMICAL WORKS, BATHS, WASH-HOUSES, AQUARIAS, GREEN HOUSES, BREWERIES, WOOL WASHING, DYE WORKS, TANNERIES, &c., &c.; they will also HEAT AIR FOR CUPOLAS AND BLAST FURNACES, and are now at work as INTERHEATERS for compound engines with direct steam from the boiler with a further saving of 15 per cent.

The New Price List, with detail information, is now ready, and will be sent on application, together with an Illustrated Catalogue, with references and testimonials from Firms using FOUR HUNDRED AND THIRTY-THREE of these Heaters.



**JOSEPH FENTON & SONS,**  
**SYKES WORKS, SHEFFIELD, and 118, Cannon-street, LONDON, E.C.,**  
MANUFACTURERS OF  
**CRUCIBLE CAST STEEL CASTINGS,**  
HAVE PLEASURE IN CALLING THE ATTENTION OF THE MINING WORLD TO THEIR

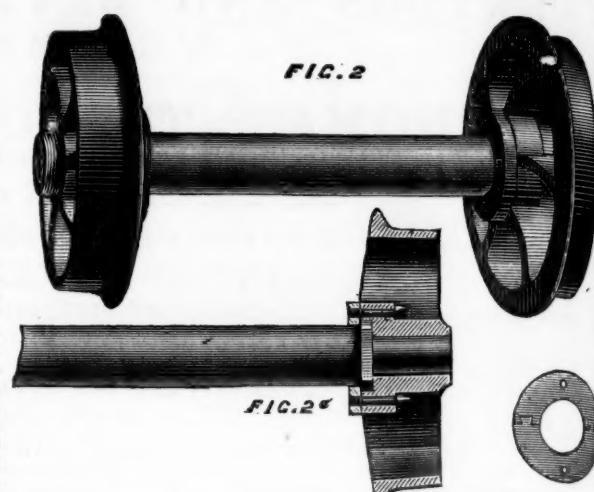
**Patent Method of Fitting up Cast Steel Wheels and Axles.**



Figs. 1 and 1a show a longitudinal view and plan of a pair of cast wheels and axles fitted up for outside bearings. A A. are the wheels; B, is the axle; C C, the washers; D D, the bolts; E, the collar on axle B; and F, the recessed boss in the wheel.

The wheel is cast with a recessed boss in the inside, made to any shape, corresponding in shape and depth with a collar formed on the axle. Figs. 2 and 2a show a longitudinal view and plan of a pair of cast wheels fitted up for inside bearings. The washers are secured to the boss of the wheel in outside bearings by bolts and nuts, and in inside bearings by set screws.

The advantages of the above system are:—A, the singular simplicity of fitting—enabling any inexperienced person, with the aid of a spanner or screw-driver, to detach the wheels from the axle or fit them together in a very short time. B, perfect solidity, the wheels and axles becoming as one piece. C, durability, no need of putting the wheels or axles into the fire, under any circumstances, which is so detrimental to wheels, rendering them remarkably brittle, and which under other systems are detached from the axle by the aid of fire. D, economy in fuel and wages, saving hundreds of pounds yearly to large coal owners. The important desiderata secured by this invention of simplicity (so often wanted in patents), solidity, durability, and economy, have not only been amply illustrated by the technical journals interested in the progress of mining operations in this country, but have at once been fully recognised by leading authorities in the mining world.



The accompanying Engraving represents a Steam Pump, suitable for general purposes; it possesses the following advantages over any other Steam Pump yet before the public:—

**BOLTS, NUTS, AND COACH SCREWS.**  
 ARCHER AND HARPER,  
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Manufacturers of all kinds of Shipbuilders', Engineers', Coach, Wagon, and Fish Bolts: Coach Screws; Railway Spikes and Brobs; Hot-pressed and Forged Nuts, Rivets, Washers, &c., &c.  
 SHIPBUILDERS' AND RAILWAY STORES' CONTRACTORS.

**COLEBROOK'S PATENT STEAM PUMPS,**  
 FOR HIGH OR LOW LIFTS AND GENERAL PURPOSES.  
SOLE MAKERS.—

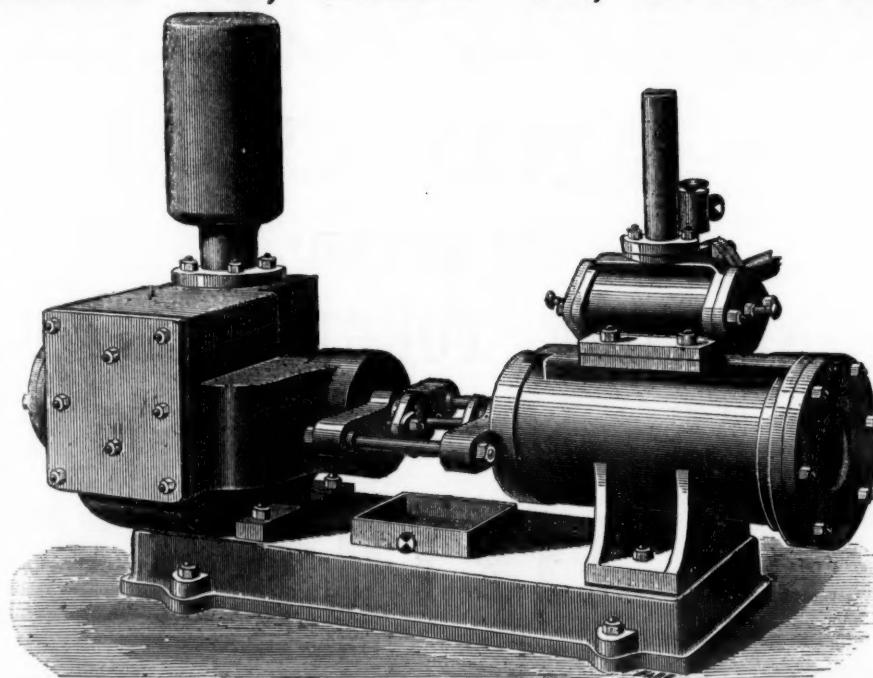
**MAY AND MOUNTAIN,**  
 BERKLEY ST., BROAD ST., BIRMINGHAM.

The accompanying Engraving represents a Steam Pump, suitable for general purposes; it possesses the following advantages over any other Steam Pump yet before the public:—

1st.—No tappets, eccentrics, levers, or other mechanical appliances are used to actuate the steam slide valve, but this office is performed by the exhaust steam.

2nd.—The only working parts in the steam cylinder are the piston and slide valve, and as there are no working parts in either the piston or cylinder covers, the full length of stroke is obtained.

3rd.—The slide valve is so easy of access that it can be examined, cleaned, and replaced in a few minutes, and it is impossible to make any error in replacing it



after examination, because it is immaterial which way it is inserted in the valve-box, whether one way or the other upwards, or whether end for end.

The Pump Valves are Colebrook's Patent, and are made in one piece. They are either of canvas, leather, india rubber, or other material, to suit the nature of the liquid to be pumped, and can be replaced in a very short time by any ordinary workman.

These Pumps are suitable for hot or cold water, hot or cold wort, sewage, ammoniacal liquor, tar, &c., and are adapted for use in breweries, chemical works, collieries, paper mills, dye-works, brick-yards, and for almost any other purpose.

**SIZES AND PRICES OF COLEBROOK'S PATENT STEAM PUMPS.**

Diameter of Steam Cylinder.....Inches	1½	3	3	3	3	4	4	4	4	5	5	5	6	6	6	7	7	7	7	8	
Diameter of Pump Cylinder.....Inches	1	1½	2	2½	3	2	2½	3	4	3	4	5	3	4	5	3	4	5	6	4	
Length of Stroke.....Inches	6	12	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	16	
Price .....	£12	£16	£17	£18	£19	£19	£20	£22	£25	£23	£28	£32	£26	£33	£36	£41	£30	£38	£41	£45	£52
Price .....	£12	£16	£17	£18	£19	£19	£20	£22	£25	£23	£28	£32	£26	£33	£36	£41	£30	£38	£41	£45	£52
Diameter of Steam Cylinder.....Inches	8	8	8	8	9	9	9	9	10	10	10	10	12	12	12	12	12	12	12	12	
Diameter of Pump Cylinder.....Inches	5	6	7	8	5	6	7	8	9	5	6	7	8	9	10	6	7	8	9	10	12
Length of Stroke.....	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Price .....	£45	£50	£56	£65	£50	£55	£60	£70	£81	£62	£68	£70	£80	£95	£100	£80	£85	£90	£100	£115	£135

AWARDED THE PRIZE MEDALS AT LEEDS, MANCHESTER, AND WREXHAM EXHIBITIONS, 1875 AND 1876.

**HADFIELD'S STEEL FOUNDRY COMPANY,**

ATTERCLIFFE, SHEFFIELD,

DEVOTE THEIR EXCLUSIVE ATTENTION TO THE MANUFACTURE OF

**CRUCIBLE STEEL CASTINGS, for Engineering and Mining Purposes,**

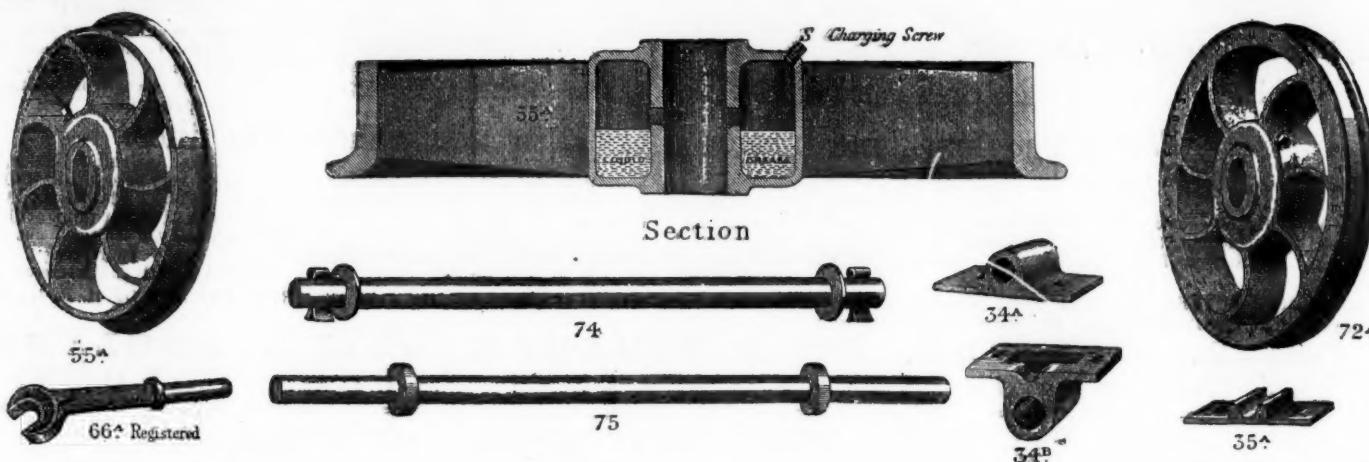
AND ARE THE SOLE MAKERS OF

**Hadfield's Self-oiling Steel Wheels**

(PATENTED).

These possess advantages held by no other wheels, and are specially adapted for Collieries, Ironstone Mines, Slate Quarries, Lead and Copper Mines, &c., &c., where LOOSE Wheels are used (*i.e.*, those revolving upon their own axles). By the old system of lubricating loose wheels, it is well known this is attended with constant labour and excessive waste; and as so little of the grease or oil applied reaches the wearing surfaces, and as re-greasing can only take place at fixed parts of the workings, the bosses of the wheels and bearings of the axles soon become dry, and cut each other: thus causing enormous wear and tear, and necessitating extra labour, haulage power, and expense. These and numerous other defects are entirely remedied by these wheels, as will be readily seen from the following illustrations and advantages claimed.

N.B.—Price per Set of Wheels and Axles (ready for use) forwarded on receipt of—  
1. Wheel on tread, 2. Width of tread, 3. Diameter of wheel and total length of axle; also whether No. 74 or 75.  
4. Rail gauge.



This Advertisement is varied from time to time.

[This Sheet of Drawings is Copyright.]

The following are a few of the numerous Advantages claimed by the above Self-oiling Wheels:—

- 1.—Two-thirds (at least) less grease or oil is required than at present used by any known method of lubricating Mining Wagons, whether by hand, machine, or otherwise.
- 2.—These wheels effect a very great saving in haulage power; also wear and tear—being so constructed as never to allow the bearings to become dry. The revolving of the wheel leads out the oil as required, and immediately the wagon stops the lubricator ceases its action.
- 3.—No waste of grease can occur, no matter in what position the wagon may be placed, when discharging its contents (even if up side down); and when the wagons are not in use it is utterly impossible for any grease to escape, as it is all stored below the outlet (as shown above).
- 4.—When once these wheels have been charged with liquid grease (which can be done by any inexperienced person) they do not require any attention or re-greasing whatever for several weeks or even months afterwards, in proportion to the distance travelled.
- 5.—These wheels can be readily fixed to any description of either wood or iron corves now in use, whether the wheels are upon the inside or outside of the frame.
- 6.—They are exceedingly simple in construction, have no detail, and are not liable to get out of order.
- 7.—They possess great strength, durability, and extreme lightness, being made of CRUCIBLE STEEL.

Where FAST Wheels and Axles are adopted instead of Loose ones, as shown above, see our Illustrated Sheets of Drawings Nos. 2 and 3 of Crucible Steel Wheels and Axles, fitted complete by Hadfield's Patent Method, and Hadfield's Self-oiling Pedestals.

**HARRIS'S PATENT WROUGHT-IRON WINDOWS.**

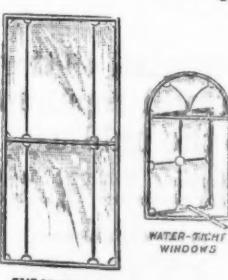
DOME AND OTHER ROOF LIGHTS, FLOOR AND PAVEMENT LIGHTS, ETC.



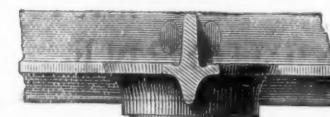
GREAT BRITAIN,  
UNITED STATES OF AMERICA,

PATENTED IN

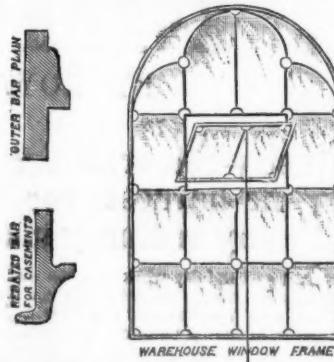
FRANCE,  
GERMANY, AND BELGIUM.



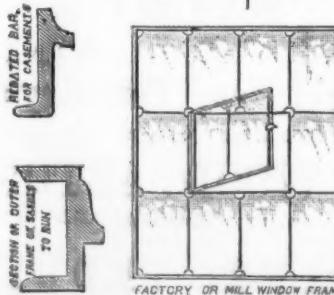
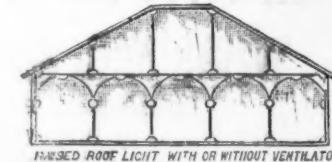
ARE STRONGER, SUPERIOR, AND CHEAPER  
THAN ANY OTHER METAL SASHES YET  
PRODUCED—COST LESS FOR GLAZING—  
ARE AS CHEAP IN MANY CASES AS WOOD



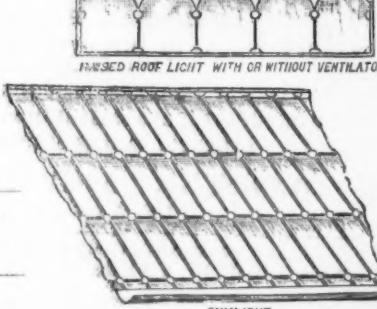
CAN BE DESIGNED AND MANUFACTURED  
TO SUIT ANY STYLE OF ARCHITECTURE  
OR POSITION WHERE A WINDOW MAY BE  
REQUIRED.  
ARE BEING EXTENSIVELY USED IN—



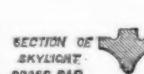
Lunatic Asylums, &c.,  
Public Buildings, Banks,  
Wharves, Warehouses,  
Factories, Mills,  
Breweries, &c.,  
Engine Houses.



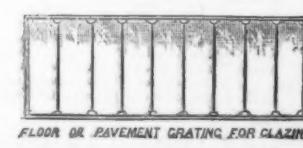
ILLUSTRATED CATALOGUES  
ON APPLICATION.



Security is obtained in  
these Skylights without  
Guard Bars, and  
with less obstruction  
to Light.



EXPORT.



In Basement Storeys and Exposed Positions Shutters  
and Guard Bars are dispensed with.

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SOLE MAKER—J. T. HARRIS, Engineer, Ironfounder, and Manufacturer,

SAFE, STRONG ROOM, AND PARTY WALL DOORS, AND EVERY KIND OF CONSTRUCTIONAL AND BUILDERS' IRONWORK, LIFTS, HOISTS, ELECTRIC BELLS AND TELEGRAPHHS, &amp;c.

90, CANNON STREET, LONDON, E.C.; AND BEAUFORT IRONWORKS, BRISTOL.

# H. R. MARSDEN, PATENTEE AND ONLY MAKER BLAKE MACHINES, OF THE WELL-KNOWN ORE CRUSHERS AND STONE BREAKERS,

WITH THE

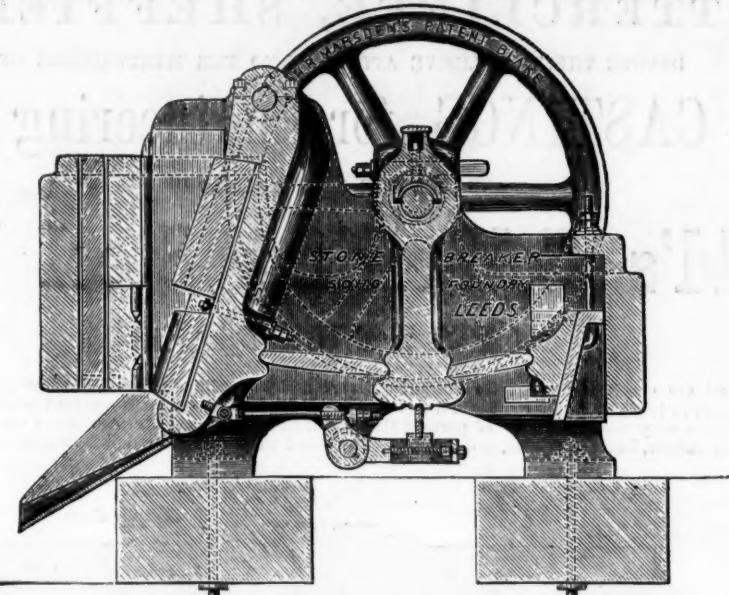
New Patent Reversible  
CRUSHING OR CUBING  
JAWS,

WHICH ARE CONSTRUCTED OF A PECULIAR  
MIXTURE OF METAL, WEARING

Four times longer than any  
other.

**60 GOLD AND  
SILVER MEDALS.**

OVER 2000 NOW IN  
USE.



For Crushing to any degree  
of Fineness, or Breaking  
to a required size.

Her Majesty's Government  
USE THESE MACHINES  
**EXCLUSIVELY,**  
ALSO ALL THE GREAT  
Mining Companies of the  
World.

H. R. M. has long observed the want of cheaper  
machines,

**STONE AND ORE CRUSHERS,**  
And has at length, by means of improved appliances  
for the production thereof, been enabled to reduce  
the prices, yet keep up at the same time the well-  
known strength of construction. Reduced prices  
on application.

FIFTY per Cent., and upwards, saved by using these Machines.

TESTIMONIAL FROM MESSRS. JOHN TAYLOR AND SONS.

6, Queen-street-place, May 10, 1877.

DEAR SIR.—We have adopted your Stone Breakers at many of the mines under our management, and are pleased to be able to state that they have in all cases given the greatest satisfaction.

We are, yours faithfully,

H. R. Marsden, Esq.

JOHN TAYLOR AND SONS.

INTENDING BUYERS ARE CAUTIONED AGAINST PURCHASING OR USING ANY INFRINGEMENT OF THE NUMEROUS PATENTS OF H. R. MARSDEN.

ILLUSTRATED CATALOGUES, TESTIMONIALS, and every information, on application to:—

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ONLY MAKER OF SAULT'S PATENT SYPHON CONDENSER.**

**R. HUDSON'S PATENT STEEL CORVES OR "TRAMS."**

Patented July, 1875, and January, 1877.

Entire new principle, saving three-quarters to 2 cwt. "dead" weight per corve. Will hold 2 to 3 cwt. more coal than the ordinary kind, without increasing the outside dimensions. Adopted by—  
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MESSRS. DYMOND'S LIVERSEDALE COAL COMPANY, NEAR LEEDS.  
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MESSRS. CLAYTON AND SPEIGHT, FARNSLEY, NEAR LEEDS.  
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KINGSWOOD COAL AND IRON CO., NEAR BRISTOL.  
MIDDLETON COLLIERY CO., NEAR LEEDS. | NEWTON COLLIERY, NEAR CASTLEFORD. | MESSRS. RUSHFORTH AND CO., ADWALTON, NEAR LEEDS. | MESSRS. JAS. FUSSELL, SONS, AND CO., FROME, SOMERSETSHIRE.  
R. HUDSON, Engineer and Ironfounder. Gildersome Street Foundry, near Leeds (Five minutes walk from Gildersome Station, G.N.R.).

**The Barrow Rock Drill  
COMPANY**

Are NOW PREPARED to SUPPLY their DRILLS, the ONLY ONES that have been SUCCESSFULLY WORKED in the MINES of CORNWALL. At DOLCOATH MINE, in the HARDEST known ROCK, a SINGLE MACHINE has, since its introduction in July, 1878, driven MORE THAN THREE TIMES the SPEED of HAND LABOUR, and at TWENTY PER CENT. LESS COST PER FATHOM.

In ordinary ends two machines may be worked together, and at a proportionately increased speed. They are strong, light, and simple, easily worked, and adapted for ends and stopes, and the sinking of winzes and shafts.

The company are also prepared to SUPPLY COMPRESSORS, and all necessary appliances for working the said Drills.

Apply to—

**LOAM AND SON,  
LISKEARD, CORNWALL.**

**IMPROVED STEEL WIRE FOR ROPES.**

**WEBSTER & HORSFALL,  
(ORIGINAL PATENTEES),**

MANUFACTURERS OF IMPROVED STEEL WIRE FOR ROPES  
FOR COLLIESIES,

RAILWAY INCLINES, PLOUGHES, HAWSERS, &c.  
SOLE MANUFACTURERS OF THE HOMOGENEOUS WIRE for the  
ATLANTIC CABLES of 1855 and 1866.

**WEBSTER AND HORSFALL,  
BIRMINGHAM.**

**THE GREAT ADVERTISING MEDIUM FOR WALES.**  
**THE SOUTH WALES EVENING TELEGRAM**  
(DAILY), and  
**SOUTH WALES GAZETTE**  
(WEEKLY), established 1857,  
the largest and most widely circulated papers in Monmouthshire and South Wales.  
CHIEF OFFICES—NEWPORT, MON., and at CARDIFF.

The "Evening Telegram" is published daily, the first edition at Three P.M., the second edition at Five P.M. On Friday, the "Telegram" is combined with the "South Wales Weekly Gazette," and advertisements ordered for not less than six consecutive insertions will be inserted at an uniform charge in both papers.

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